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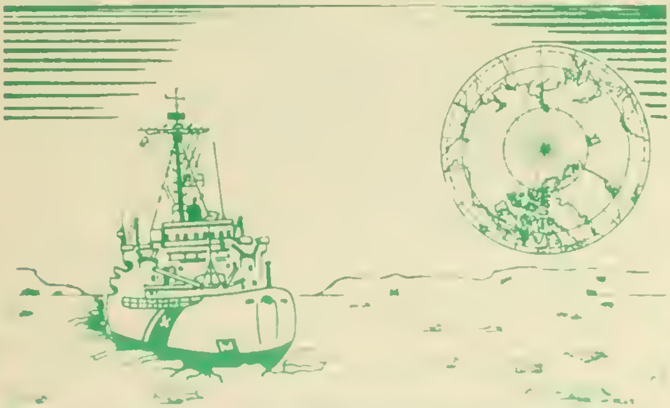

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REPORT No. 42 CG 373–42

OCEANOGRAPHIC INVESTIGATION OF THE NORTHERN BERING SEA AND BERING STRAIT 8–21 JUNE 1969

David M. Husby
Gary L. Hufford

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WASHINGTON, D.C.

USCGC NORTHWIND (WAGB-282)

ABSTRACT

Physical and chemical data were obtained by the USCGC NORTHWIND (WAGB–282) in the Bering Sea-Bering Strait area during 8–21 June 1969. Distributions of temperature, salinity, dissolved oxygen, inorganic phosphate, nitrate and nitrite are described and interpreted. The Deep Shelf Water of the Bering Sea was traced farther north in June than ever before reported.

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Oceanographic Investigation of the Northern Bering Sea and Bering Strait

8–21 June 1969

David M. Husby [1] and Gary L. Hufford [2]

INTRODUCTION

The U.S. Coast Guard Oceanographic Unit has been conducting investigations of summer conditions in the Bering Sea-Bering Strait-Chukchi Sea area since 1967. Results of the 1967 and 1968 investigations have been published as part of the Coast Guard Oceanographic Report series (Husby, 1969; and Husby, in preparation). This report contains the oceanographic results obtained in this area on the cruise of the USCGC NORTHWIND (WAGB-282) during 8–21 June 1969. The main purpose of this investigation was to provide information on the summer circulation and the interaction of the water masses in the northern Bering Sea. The Institute of Marine Science of the University of Alaska participated in the cruise with a secondary purpose to investigate the physical and chemical parameters governing the biological productivity of the Bering Sea.

The importance of the flow through the Bering Strait to the hydrography of the Arctic Ocean has been described by Coachman and Barnes (1961) and Gushchenkov (1964). The relatively warm Bering Sea water flows northward through the Bering Strait, mixes with the colder Siberian Shelf water in the Chukchi Sea, and then intrudes into the Arctic Ocean at subsurface levels in the Beaufort Sea gyral. In summer the Bering Sea water which flows into the Arctic Ocean is probably the main component of the temperature maximum layer at 75–100 meters in the western basin of the Arctic.

METHODS

In investigation of the general physical and chemical oceanography of the northern Bering Sea was conducted during 8–21 June 1969 by personnel from the U.S. Coast Guard Oceanographic Unit. A total of 73 oceanographic stations were occupied in water depths which rarely exceeded 50 meters (fig. 1). At each station a Nansen bottle cast was made to obtain measurements of temperature, salinity, and the concentrations of dissolved oxygen and inorganic nutrients. Observations were made at 5-meter intervals from the surface to near bottom on each cast.

Water temperature was measured at each level by a pair of deepsea reversing thermometers. Corrected temperatures from the pair of thermometers were averaged when the difference between them was less than 0.05C°. The resulting *in situ* temperatures are considered accurate to within ±0.025C°.

Water samples were drawn from each Teflon-lined Nansen bottle and determinations of salinity were made aboard the ship using a Bissett-Berman Model 6220 inductive salinometer. Replicate determinations were made on each sample and the resulting salinities are believed to have a laboratory accuracy of ±.005‰. The conductivity values obtained were converted to salinity by use of the International Oceanographic Tables published jointly by UNESCO and the National Institute of Oceanography of Great Britain (UNESCO, 1966).

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Dissolved oxygen content was determined by a modified Winkler method using sodium thiosulfate as a standard and a starch indicator to determine the titration endpoint. Water samples were drawn from each Nansen bottle immediately upon retrieval and treated with both manganous sulfate and alkaline iodide. Replicate determinations were made on each sample and the oxygen values are believed accurate to at least ±0.03 ml/l.

Two samples were drawn from each Nansen bottle in 125 ml polyethylene bottles and immediately frozen in the ship's freezer. These frozen samples were returned to the Coast Guard Oceanographic Unit for determination of concentrations of inorganic phosphate, nitrate, and nitrite. The methods outlined in the manual of Strickland and Parsons (1965) were used.

Underwater photographs were taken at 25 stations using a Geodyne Model 205 bottom contact camera for study of benthic organisms as as well as indication of bottom currents. The photographs were not compass-oriented, so no quantitative information was obtained on bottom currents. These photographs are retained by the Coast Guard Oceanographic Unit and will be the subject of a future report.

Three scientists from the University of Alaska Institute of Marine Science conducted investigations of primary productivity, organic carbon, and trace metal distribution. A total of 10 stations were taken in conjunction with hydrographic stations, usually near 0800 hours local time. At each station, approximately 30 liters of water were collected from four different depths corresponding to measured light extinction levels. Water was drawn from each sample to measure nitrate, total nitrogen, phosphate, total phosphorus, silicate, and ammonia concentrations as well as plant pigments. Portions of each sample were utilized to measure organic carbon content and to perform carbon and nitrogen uptake experiments. At selected stations, vertical tows for phytoplankton were conducted from near bottom to the surface with a number 20-mesh nylon net. Water samples were obtained at the same locations and depths as the productivity stations for later analysis of trace metal content. All these data are retained by the University of Alaska, Institute of Marine Science, and will be published in their report series.

DESCRIPTION OF WATER MASSES

The distribution of water properties near the surface in the northern Bering Sea and Bering Strait in June 1969 was generally similar to conditions observed in the past (Barnes and Thompson, 1938; Goodman, et al., 1942; and Saur, et al., 1954). Warm water (5–8°C) of low salinity (<31.5‰) was found in the surface layer along the Alaskan coast (figs. 2 and 5). Water with these properties was first labeled as Alaskan Coastal Water (ACW) by Saur, et al. (1954), and is recognized by more recent authors (Coachman and Aagaard, 1966). This water mass had an oxygen content between 7.0–7.5 ml/l, which was near saturation. The warm, low salinity water seen at stations 20–27 in the northwestern portion of Norton Sound was probably the result of runoff of the Yukon River (figs. 13 and 14). The low salinity surface water of the entire region reflects the large fresh-water discharge of the Alaskan and Siberian Rivers. The most important rivers are the Yukon in Alaska, which has a mean annual discharge of 6220 m^3/sec, and the Anadyr River in Siberia which has a mean annual discharge of 1660 m^3/sec (Sokolov, 1964).

A relatively cold, low salinity surface water mass (1.0 to 2.5°C, 31.4 to 32.3‰) with an oxygen content of 9.0 to 10.0 ml/l, found on the western side of the survey area has not been classified previously (figs. 8–10, 13–15, 18–20, 23–25, 28–30, and 33–35). This water may have been advected through the Strait of Anadyr to the north, but its relatively high salinity precludes runoff from the Anadyr River as a major component.

In the western portion of the area of investigation, a cold (0.5–2.0°C), highly oxygenated (8.0–9.5 ml/l), saline water mass (31.9–32.5‰) was found which corresponded closely with the Modified Shelf Water (MSW) described by Saur, et al. (1954). This MSW was found in 1969 along the east and west coast of St. Lawrence Island in sections A–A′ and B–B′, then near the bottom in the middle of section C–C′ and from the surface to near the bottom in the western portions of sections D–D′, E–E′, and F–F′ (figs. 8–10, 13–15, 18–20, 23–25, 28–30, and 33–35.

Near the bottom of the western portion of the survey area (figs. 4 and 7), a water mass seemed to intrude northeastward from the

Strait of Anadyr west of St. Lawrence Island to the Bering Strait then northward through the Strait (66°33′N). This water mass had the lowest temperatures (0.0 to –1.7°C) and highest salinities (32.4–32.9‰) in the entire survey area. The oxygen content of this water mass ranged from 8.0 to 9.0 ml/l, which was near or greater than the saturation value for these temperatures. A water mass having similar characteristics was labeled as Deep Shelf Water (DSW) by Saur, et al. (1954). This DSW showed an increase in temperature, but a relatively constant salinity as it was traced to the north. DSW rarely has been reported (Grider, 1968) as far north as the Bering Strait in the summer.

The origin of the DSW remains unclear. Grider (unpublished, 1968) stated that this cold, saline water seemed to concentrate near the eastern and western ends of St. Lawrence Island in July 1968 and that this should give some clues to its origin. Saur, et al. (1954), said this water originated from freezing of seawater on the Bering Sea Shelf in the winter. The distribution of properties near the bottom in June 1969, with the coldest temperatures in the Strait of Anadyr, suggest the Gulf of Anadyr, or the central Bering Sea as possible source regions. No direct measurements of current were made to substantiate the inferred direction of flow; however, the CGC NORTHWIND was observed to drift nearly 1.5 miles to the northeast in approximately one hour while occupying station 2 west of St. Lawrence Island. The fact that the DSW could be traced as far north as the Bering Strait suggests that there may have been a northward flow in the western channel of the Bering Strait in June 1969.

A zone of transition of mixing was observed between the Alaskan Coastal Water and the Modified Shelf Water in all the cross sections in the eastern portion of the survey area. This transitional zone corresponds to the water mass labeled Intermediate Water (2–4°C, 31.5–31.9‰) by Saur, et al. (1954). Beyond section C–C′, this zone was characterized by a nearly homogenous vertical distribution of properties (figs. 23–37).

DISTRIBUTION OF INORGANIC NUTRIENTS

The distribution of nutrients showed great spatial variation. Nitrate was entirely absent or present in low concentrations (<1.6 μg-at/l) in the surface waters of the eastern portion of the survey area; however, concentrations increased towards the western side of the area with the highest values (12–16 μg-at/l) found along the Siberian coast (figs. 12, 17, 22, 27, 32, and 37). Nitrite was absent or in very low concentrations at all depths throughout the entire area of study. Surface concentrations of inorganic phosphate increased from less than 0.8 μg-at/l on the eastern side of the area to maximum values of 1.6 μg-at/l near the Siberian coast (figs. 11, 16, 21, 26, 31, and 36).

The horizontal gradients of inorganic nutrients at subsurface levels were similar to those at the sea surface, but higher concentrations were involved. The highest values of phosphate (>2.0 μg-at/l) and nitrate (>18.0 μg-at/l) occurred in the Deep Shelf Water on the western side of the survey area (figs. 11, 12, 21, 22, 26, 27, 31, and 32). There was a decrease in both phosphate and nitrate values northward in the Deep Shelf Water, indicating flow to the north. The high inorganic nutrient concentrations in the DSW could be used to determine the source of this cold water. The distinct stratification of the water in the northern Bering Sea and Bering Strait indicated by the temperature and salinity distributions was duplicated by the distribution of nitrate and phosphate. The large gradients of the nutrient concentrations corresponded with similar gradients of temperature and salinity suggesting the possibility that these inorganic nutrients may be considered as quasi-conservative properties in this limited area of investigation.

The source of the high nutrient concentrations in the western portion of the Bering Sea and Bering Strait has not been determined. Barnes and Thompson (1938) suggested the Gulf of Anadyr as a source. Coachman and Aagaard (1966) have stated that the distribution of properties in the northern Bering Sea and Bering Strait is probably determined by advection into the area. Our data do not solve the problem, but the nutrient distributions found in 1969 do suggest that the Gulf of Anadyr is the source of the high concentrations. The Anadyr River has a mean annual discharge of 1660 m^3/sec (Sokolov, 1964) into the Gulf, and there are several smaller streams in the area adding to the runoff. The importance of river runoff as an input of nutrients into the sea is well known. However, no data are available on the nutrient load of the Siberian rivers.

Another possible source for the high nutrient concentrations in the western Bering Sea is the recycling of the nutrients back into the water column by turbulent action of bottom currents across shoal areas. The northern Bering Sea and Bering Strait are very shallow (less than 60 meters) with bottom currents of 16 to 76 cm/sec measured in the western portion (Coachman and Aagaard, 1966). Our data show no information to resolve the role of this mechanism

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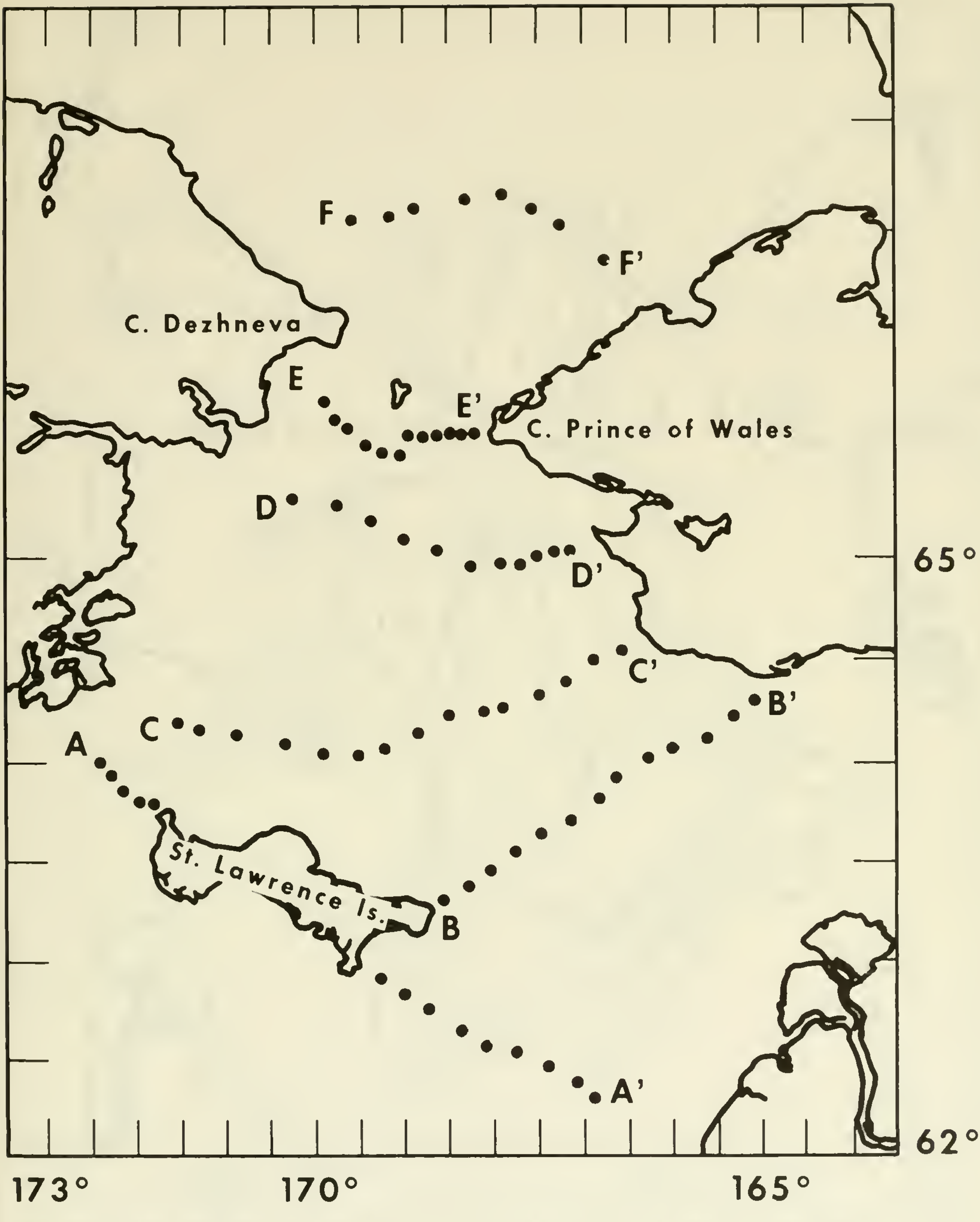

Figure 1. Location of stations and sections in Bering Sea and Bering Strait, 8–21 June 1969.

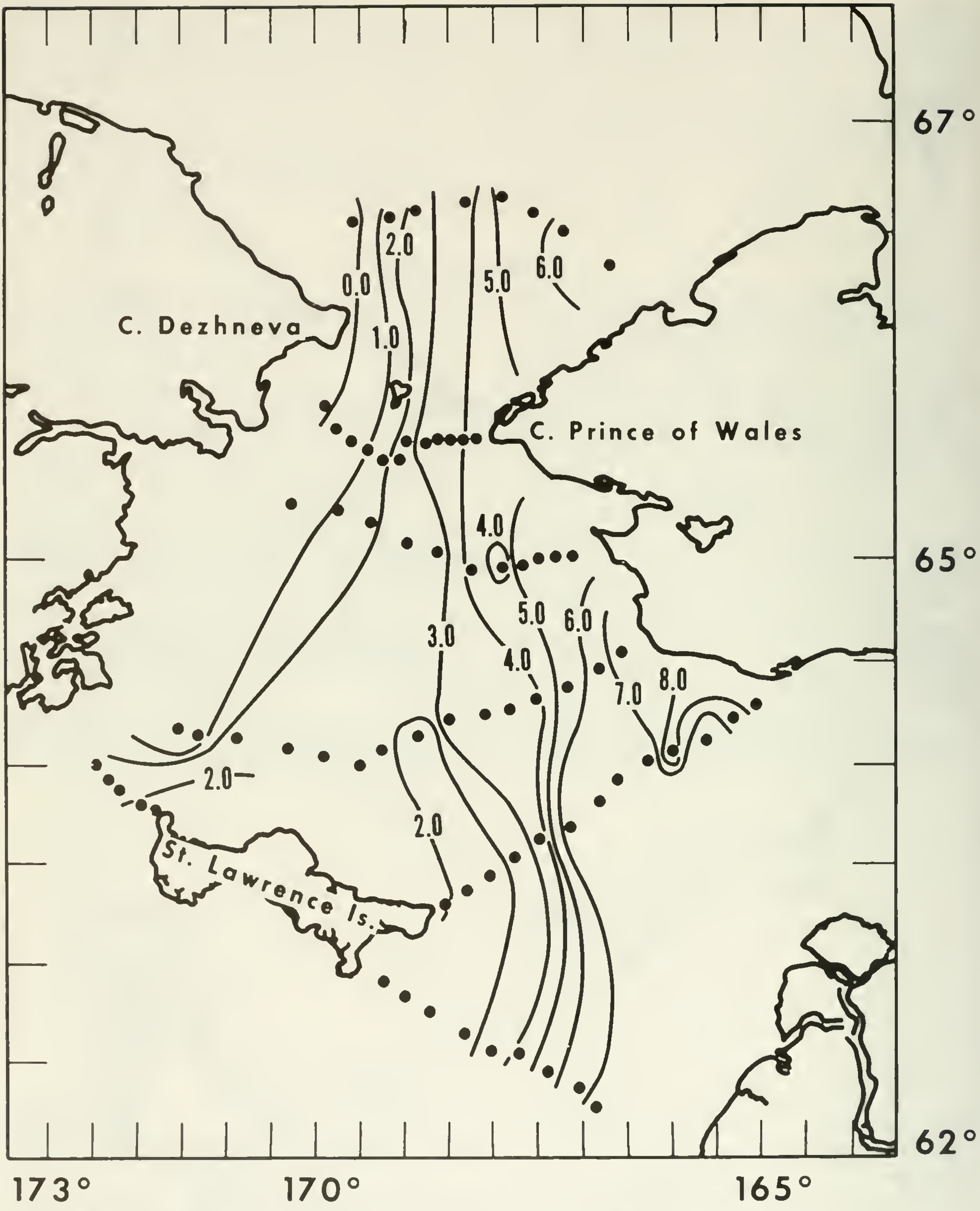

Figure 2. Horizontal distribution of sea surface temperature (°C) in Bering Sea and Bering Strait, 8–21 June 1969.

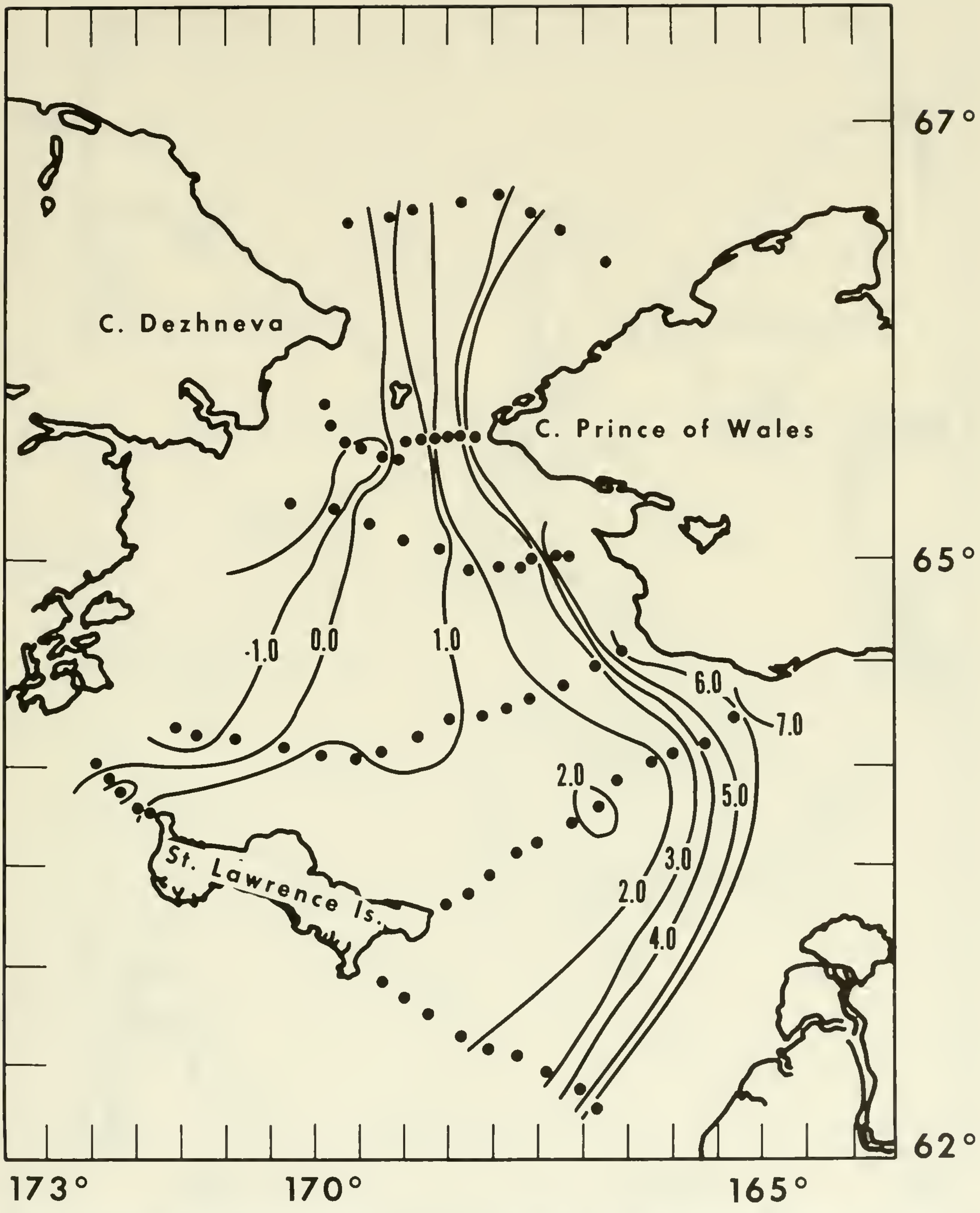

Figure 3. Horizontal distribution of temperature (°C) at 15 meters in Bering Sea and Bering Strait, 8–21 June 1969.

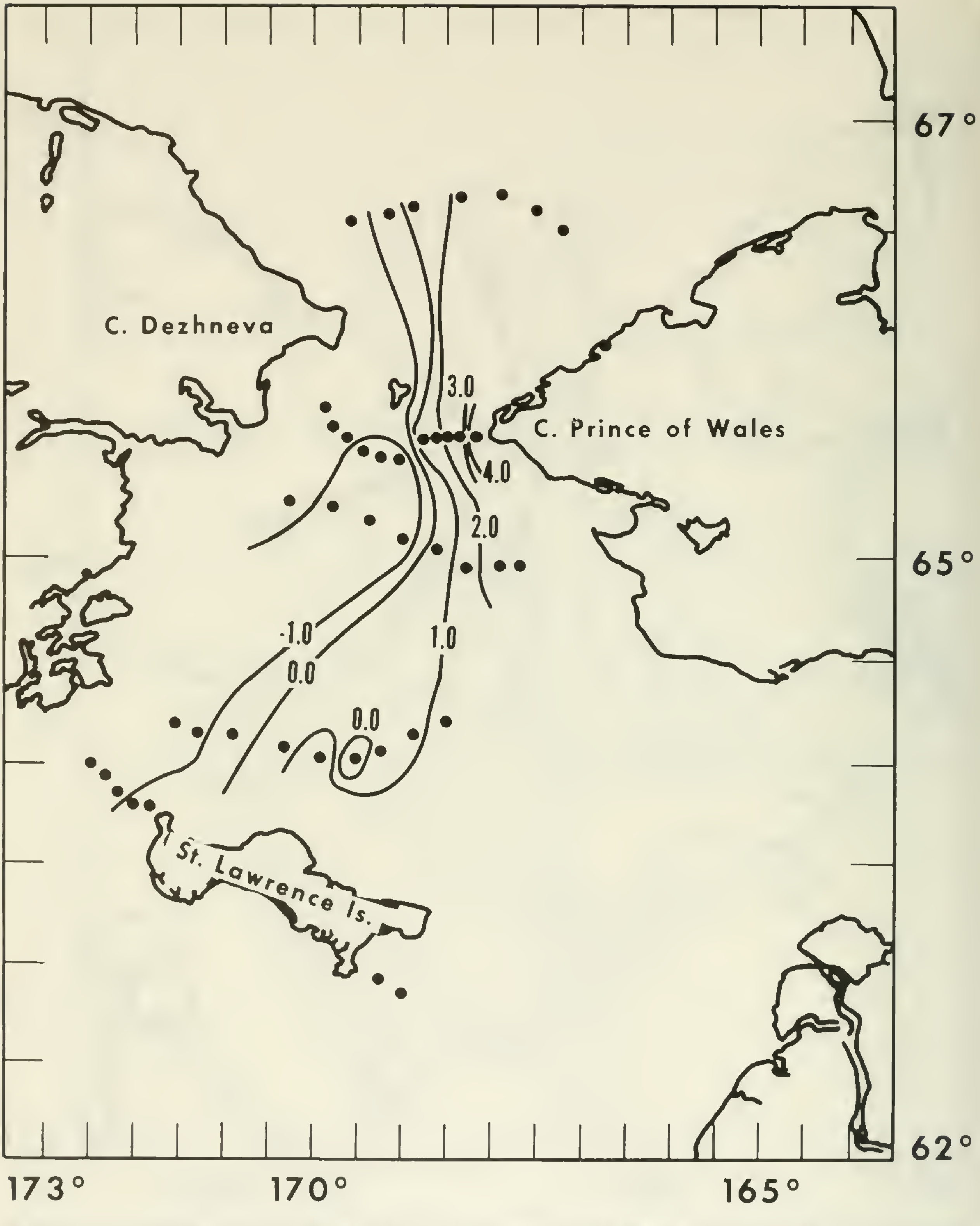

Figure 4. Horizontal distribution of temperature (°C) at 30 meters in Bering Sea and Bering Strait, 8–21 June 1969.

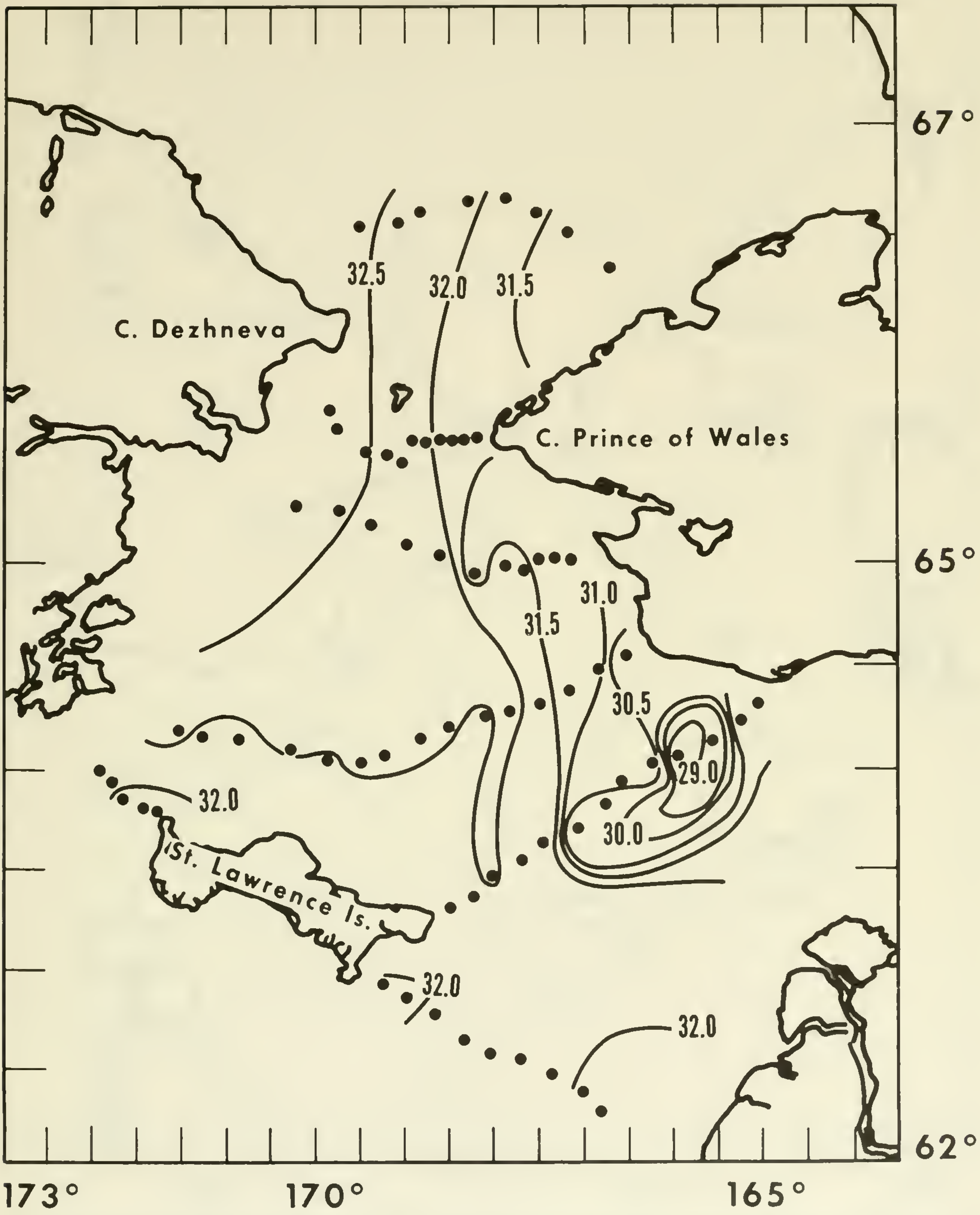

Figure 5. Horizontal distribution of salinity (‰) at the sea surface in Bering Sea and Bering Strait, 8–21 June 1969.

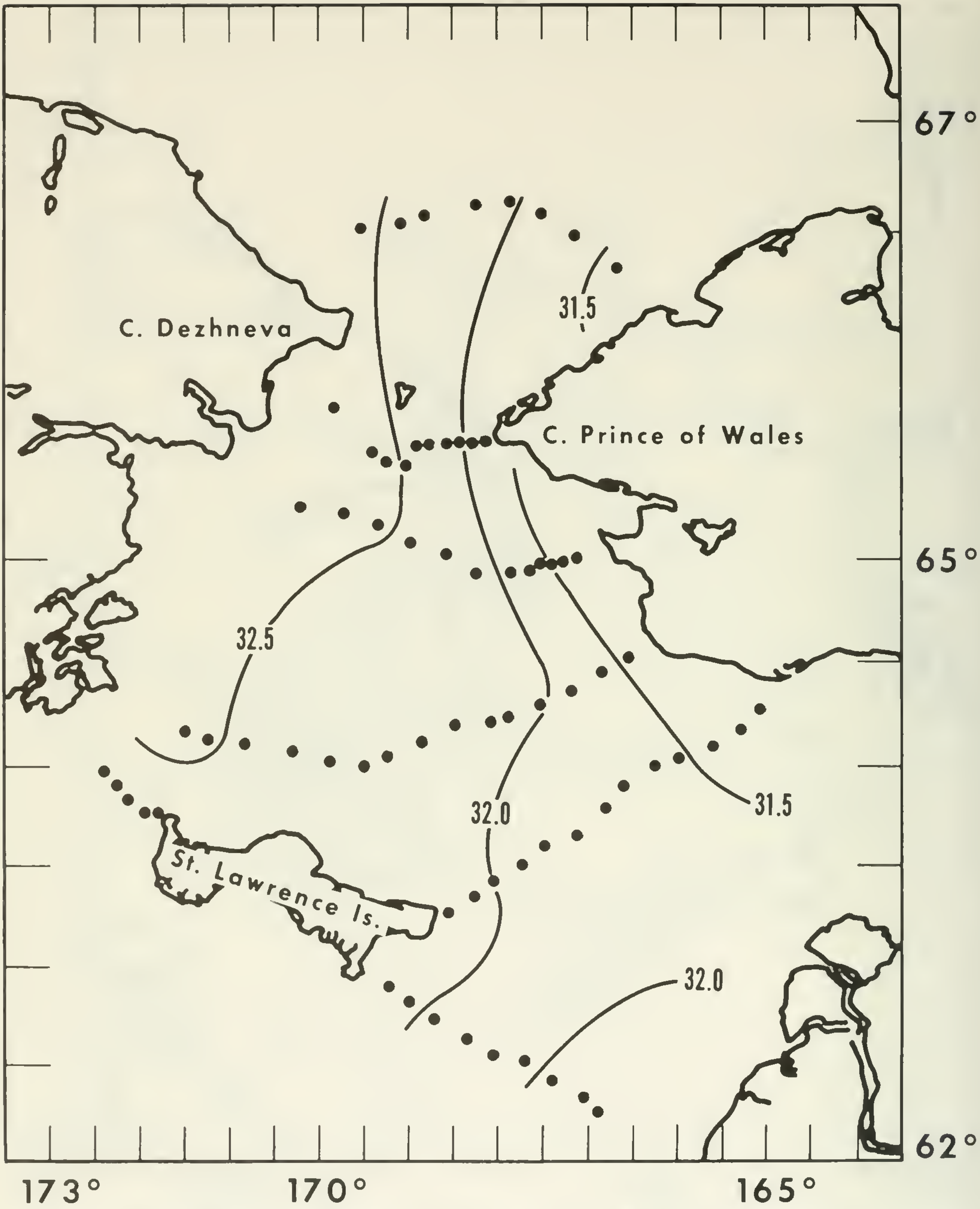

Figure 6. Horizontal distribution of salinity (‰) at 15 meters in Bering Sea and Bering Strait, 8–21 June 1969.

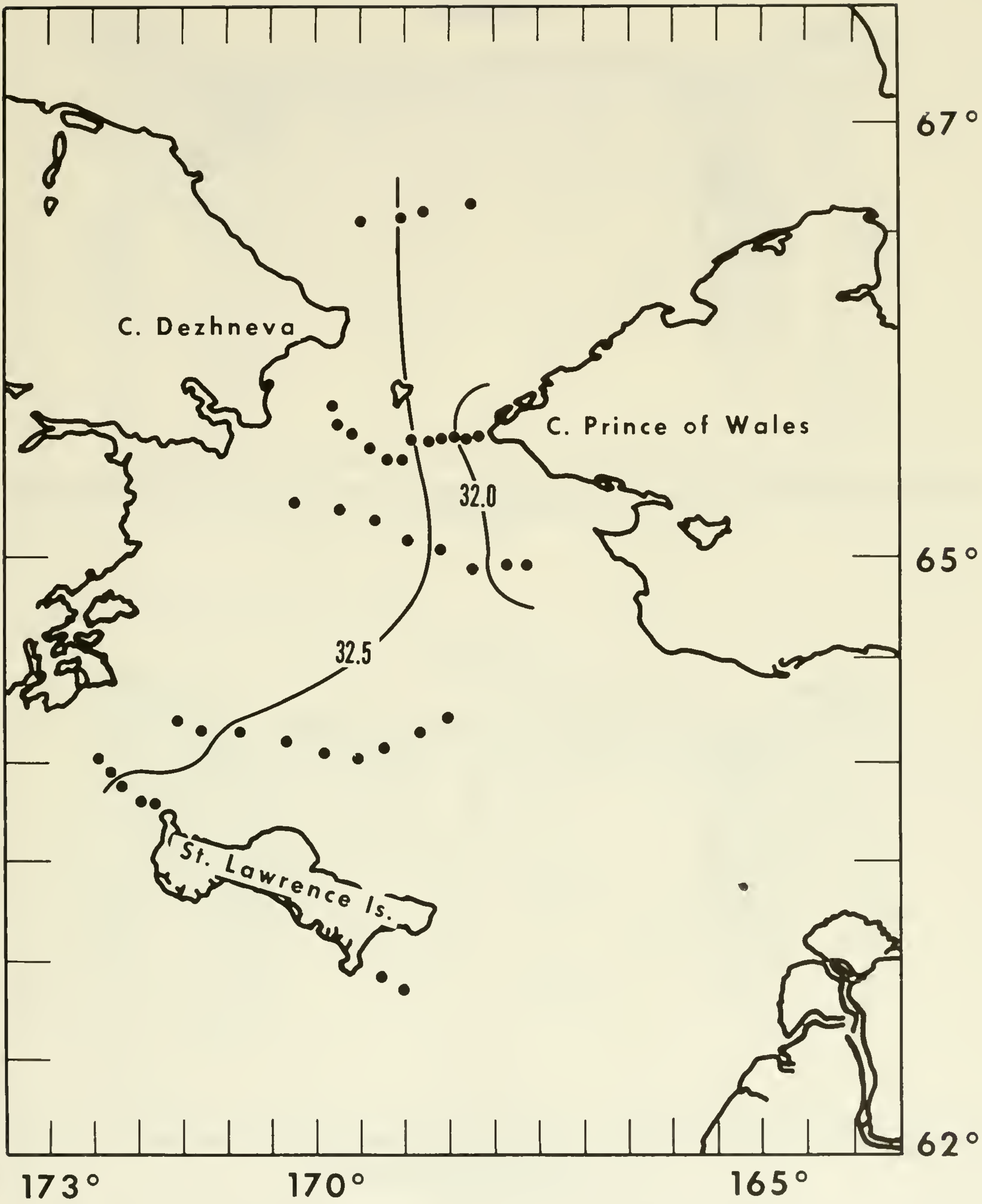

Figure 7. Horizontal distribution of salinity (‰) at 30 meters in Bering Sea and Bering Strait, 8–21 June 1969.

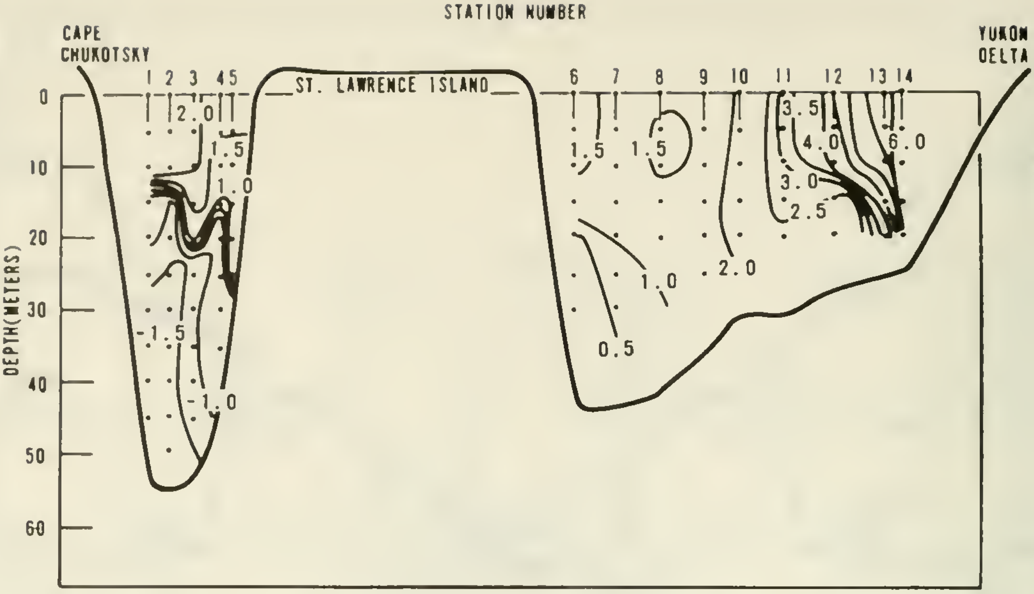

Figure 8. Vertical distribution of temperature (°C) along section A–A′ during Arctic West, 8–16 June 1969. Contour interval is 0.5°C.

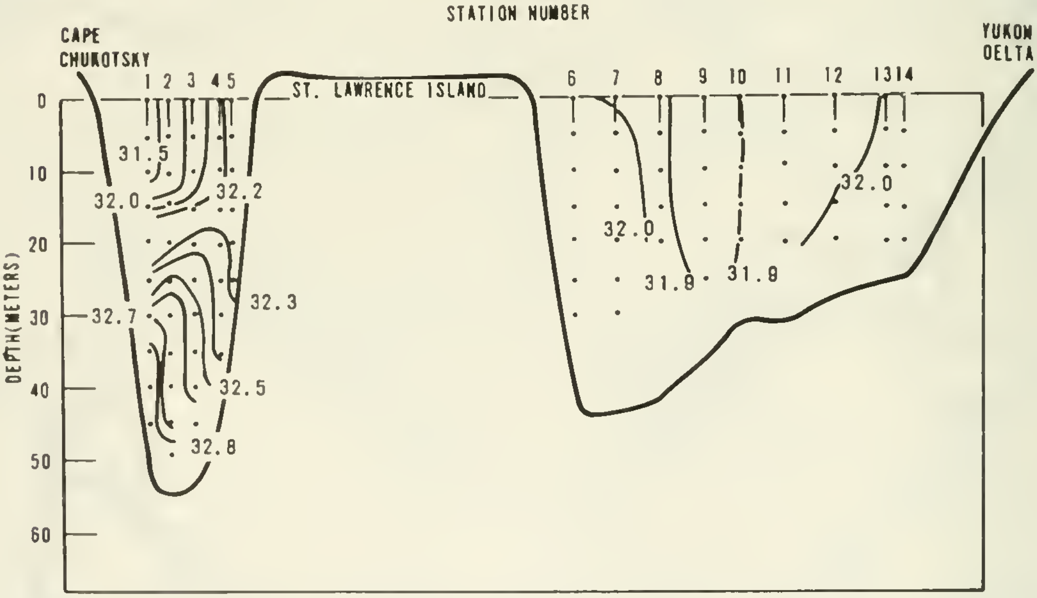

Figure 9. Vertical distribution of salinity (‰) along section A–A′ during Arctic West, 8–16 June 1969. Contour interval is 0.1‰.

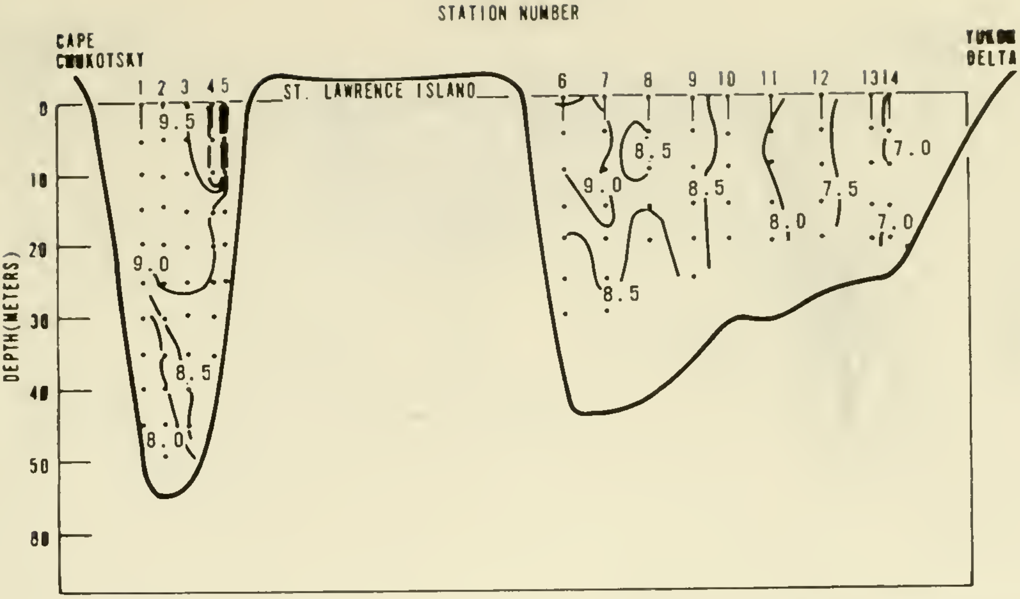

Figure 10. Vertical distribution of dissolved oxygen (ml/l) along section A–A′ during Arctic West, 8–16 June 1969. Contour interval is 0.5 ml/l.

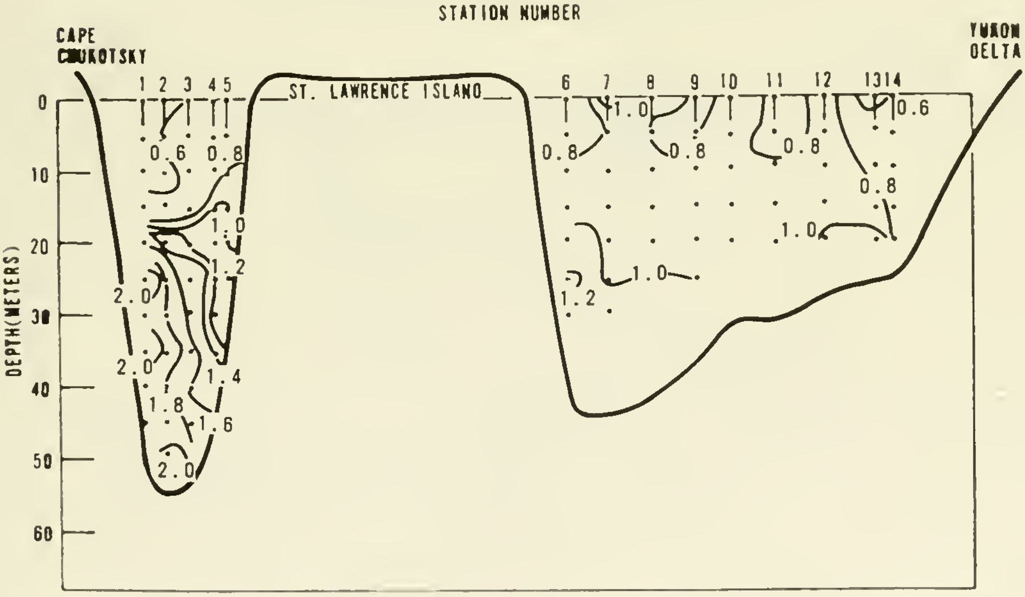

Figure 11. Vertical distribution of inorganic phosphate (μg-at/l) along section A–A′ during Arctic West, 8–16 June 1969. Contour interval is 0.2 μg-at/l.

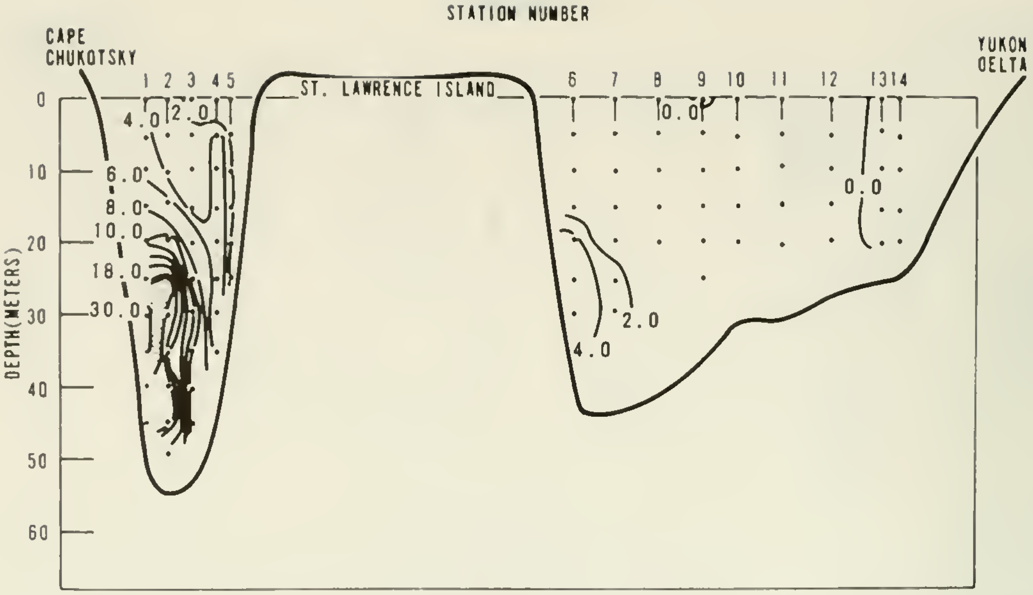

Figure 12. Vertical distribution of nitrate (μg-at/l) along section A–A′ during Arctic West, 14–16 June 1969. Contour interval is 2.0 μg-at/l except between 18.0 and 30.0 μg-at/l where the interval is 12.0 μg-at/l.

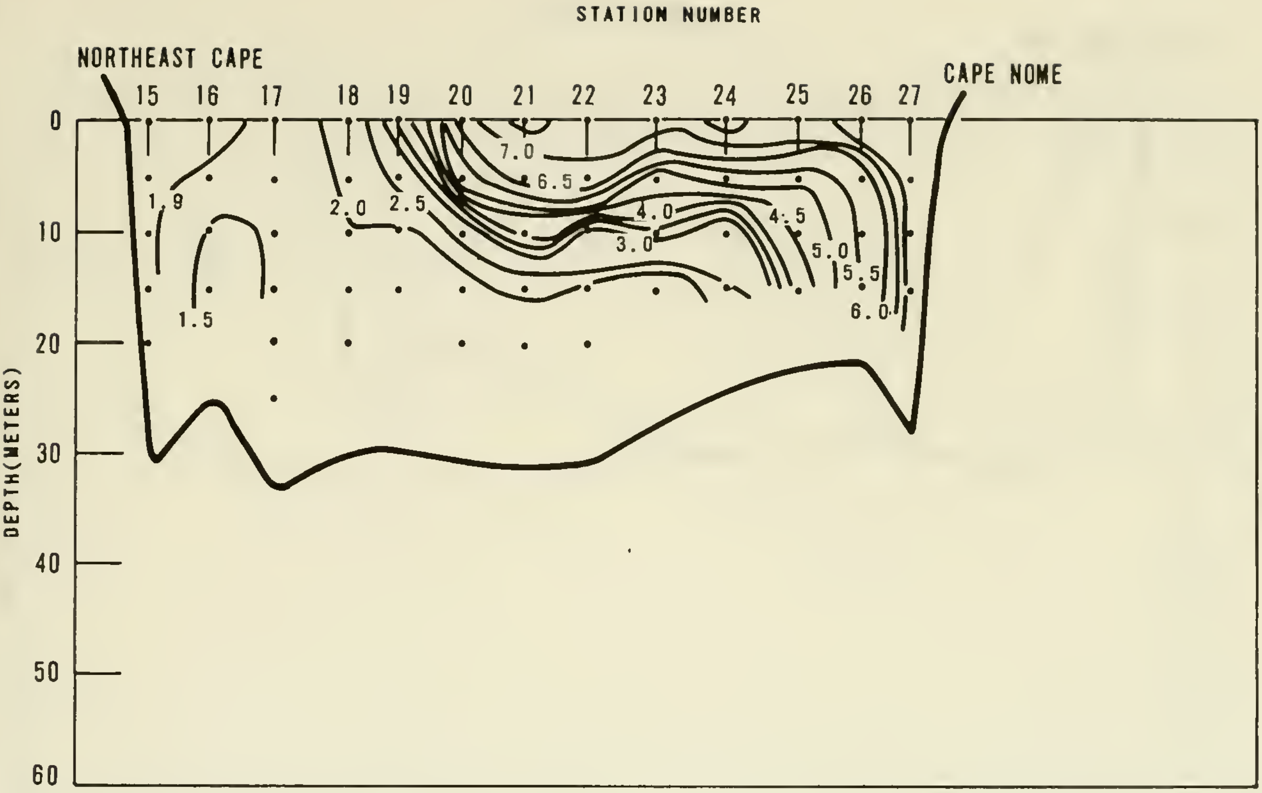

Figure 13. Vertical distribution of temperature (°C) along section B–B′ during Arctic West, 16–17 June 1969. Contour interval is 0.5°C except between 1.5 and 1.9°C.

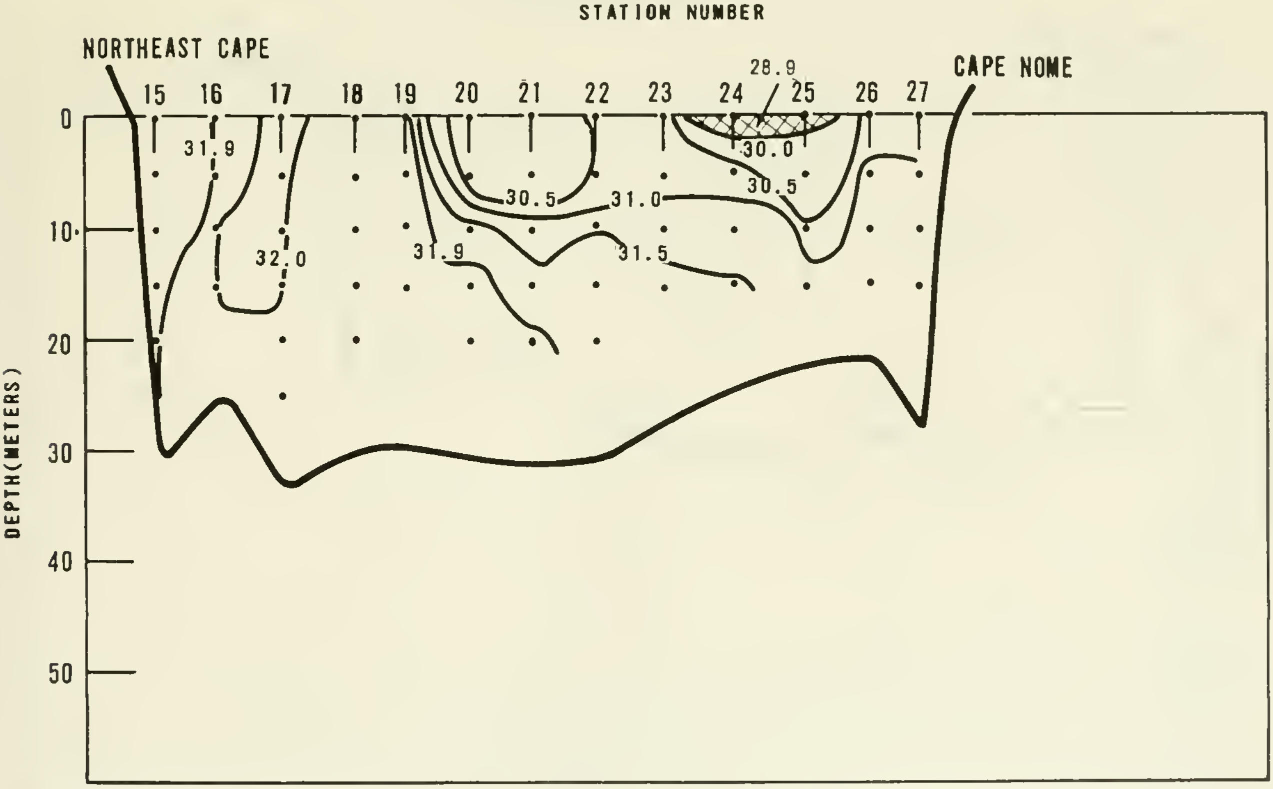

Figure 14. Vertical distribution of salinity (‰) along section B–B′ during Arctic West, 16–17 June 1969. Contour interval is 0.5‰ except between 31.9 and 32.0‰ and between 28.9 and 30.0‰.

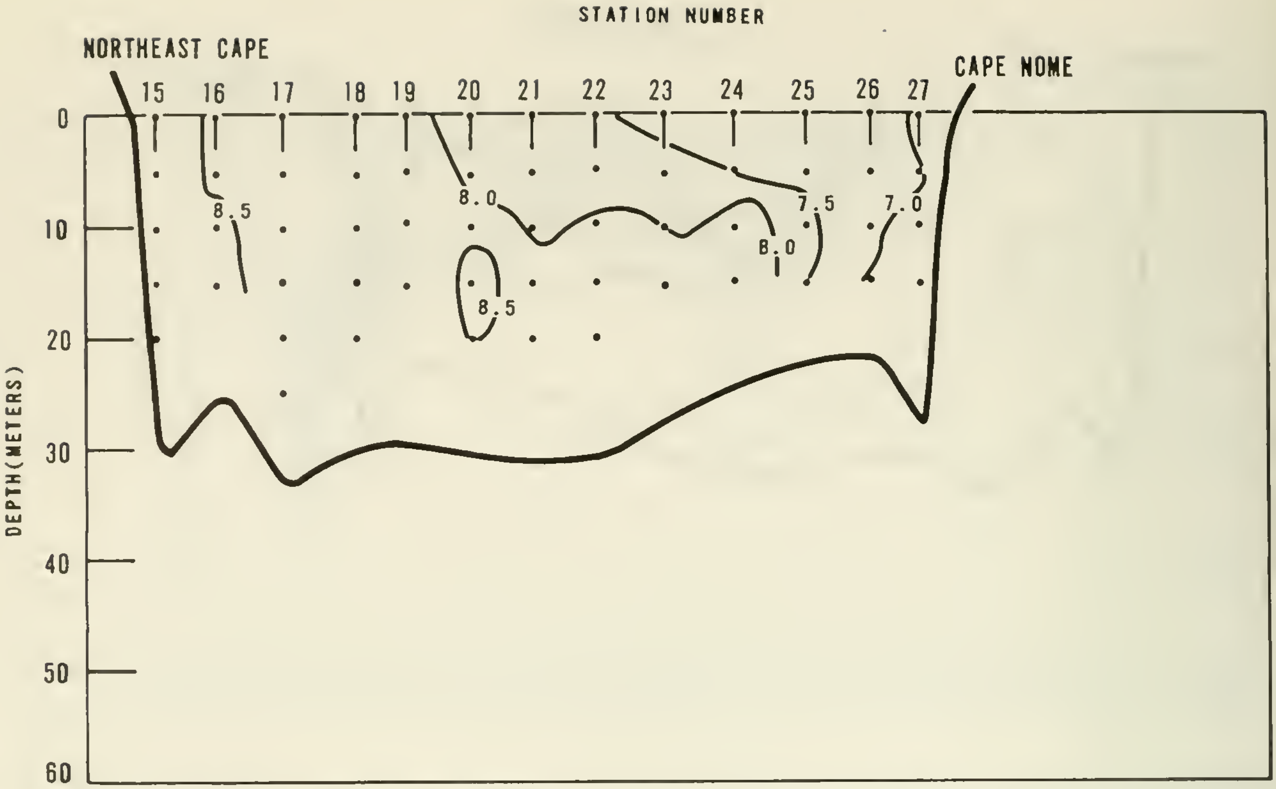

Figure 15. Vertical distribution of dissolved oxygen (ml/l) along section B–B′ during Arctic West, 16–17 June 1969. Contour interval is 0.5 ml/l.

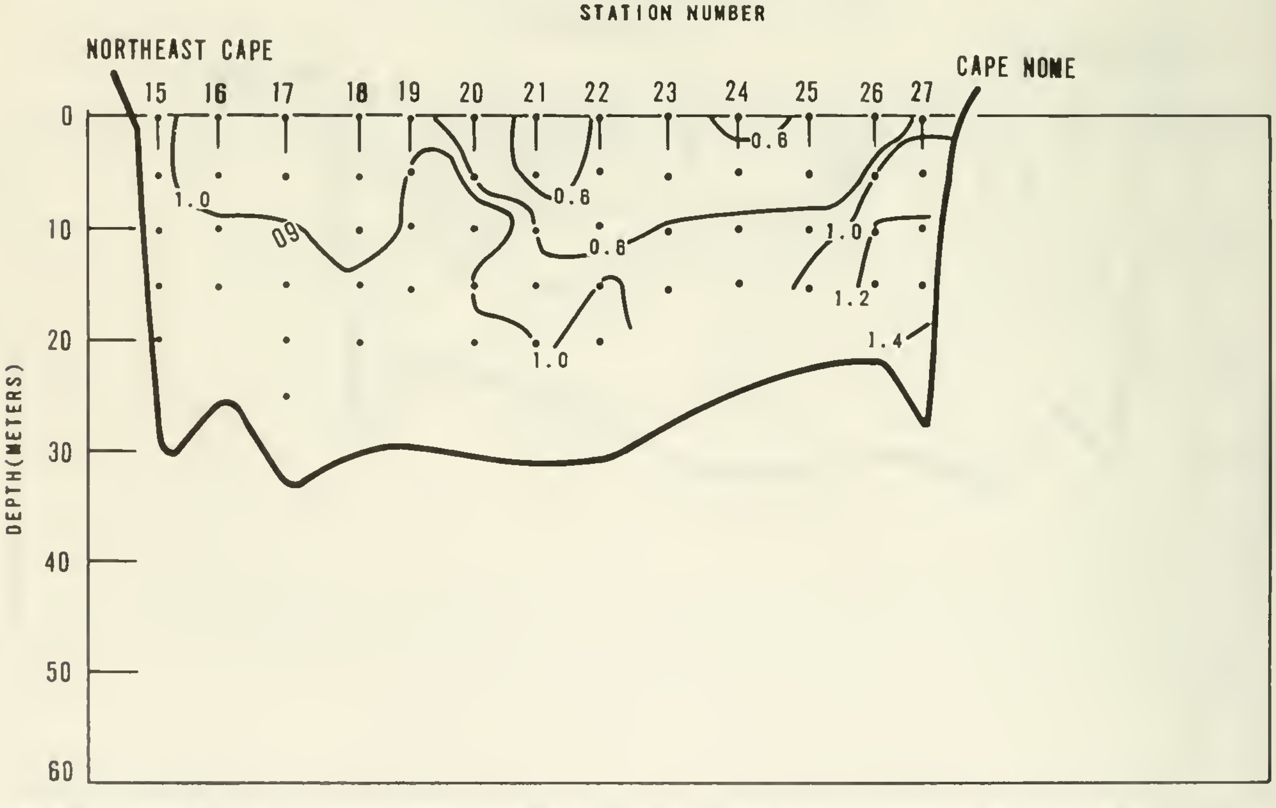

Figure 16. Vertical distribution of inorganic phosphate (μg-at/l) along section B–B′ during Arctic West, 16–17 June 1969. Contour interval is 0.2 μg-at/l.

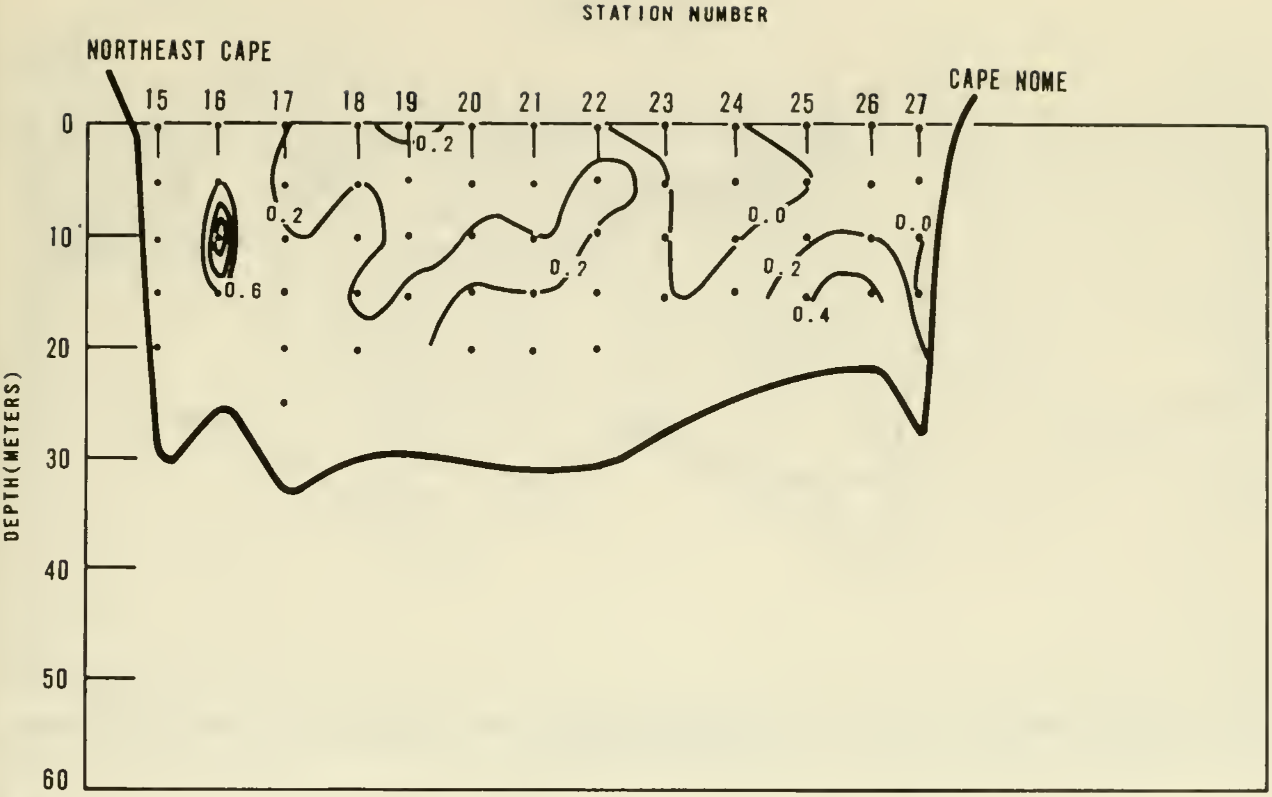

Figure 17. Vertical distribution of nitrate (µg-at/l) along section B–B′ during Arctic West, 16–17 June 1969. Contour interval is 0.2 µg-at/l.

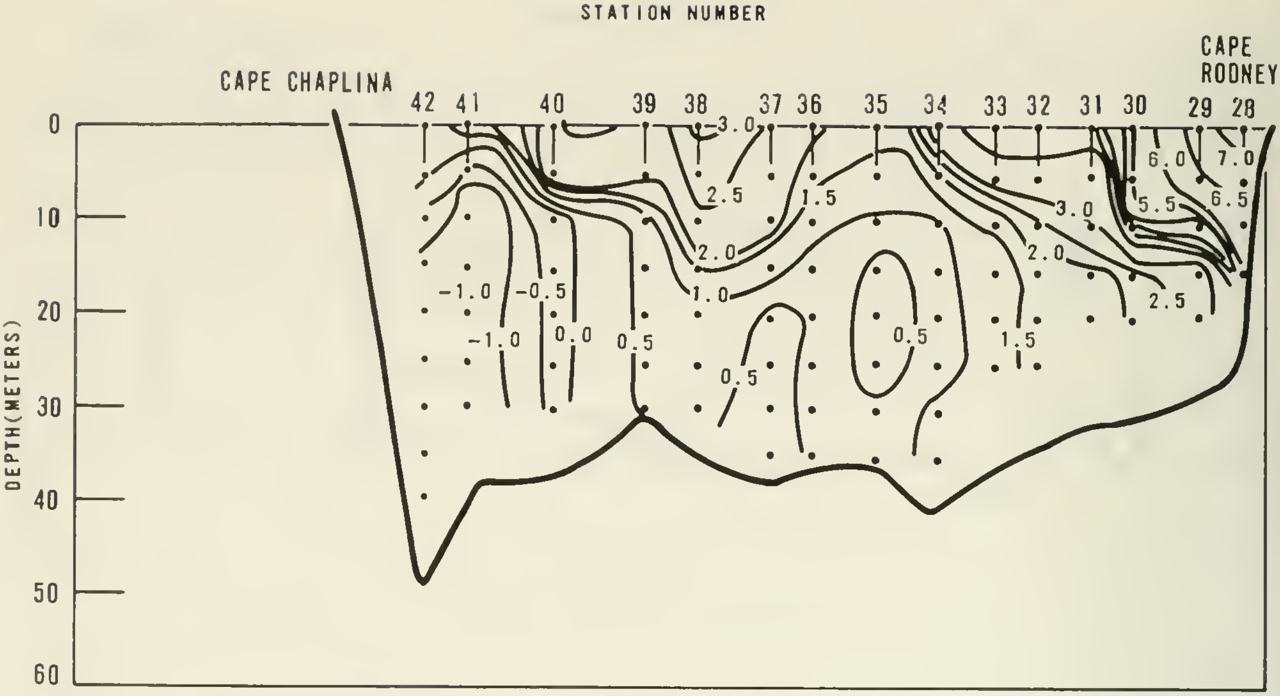

Figure 18. Vertical distribution of temperature (°C) along section C–C′ during Arctic West, 17–18 June 1969. Contour interval is 0.5°C.

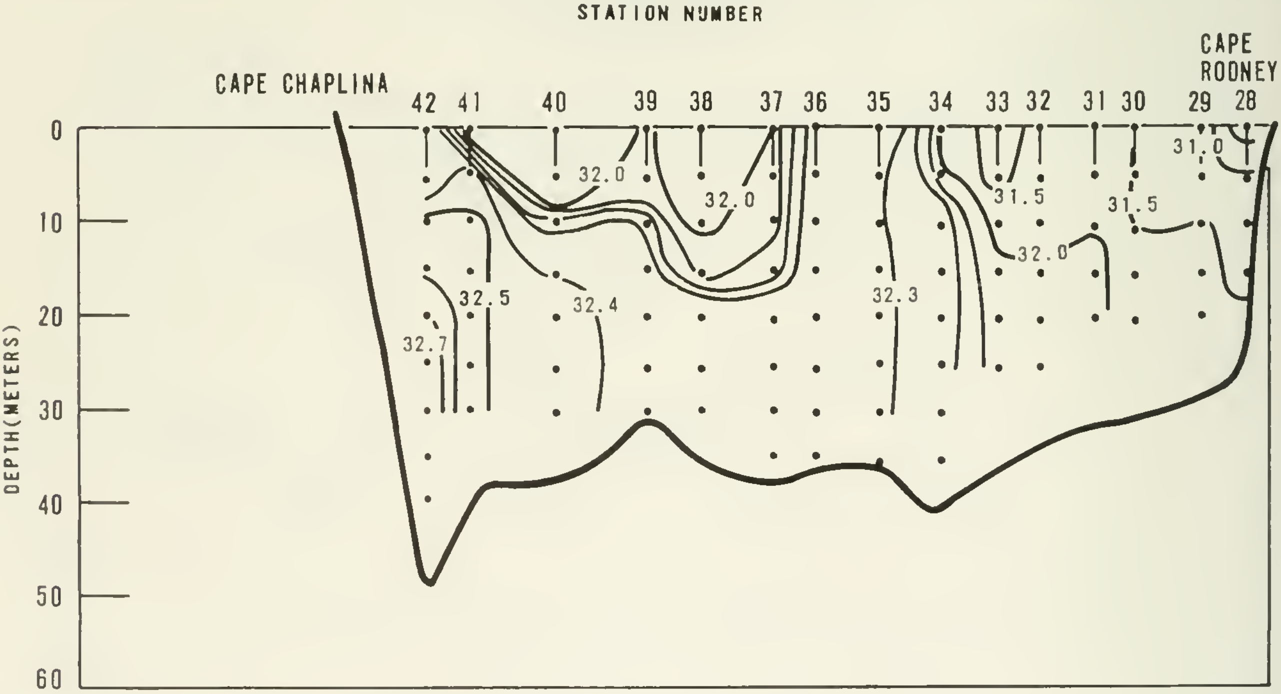

Figure 19. Vertical distribution of salinity (‰) along section C–C′ during Arctic West, 17–18 June 1969. Contour interval is 0.1‰ except between 31.0 and 32.0‰ where the interval is 0.5‰.

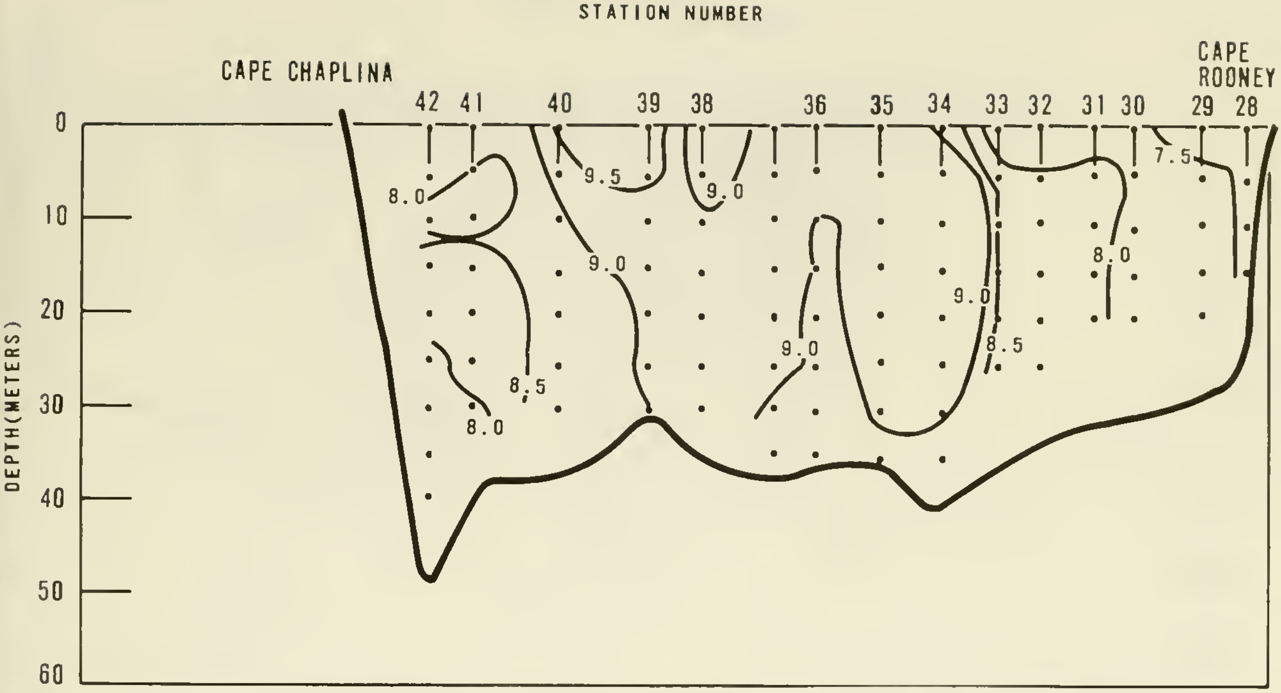

Figure 20. Vertical distribution of dissolved oxygen (ml/l) along section C–C′ during Arctic West, 17–18 June 1969. Contour interval is 0.5 ml/l.

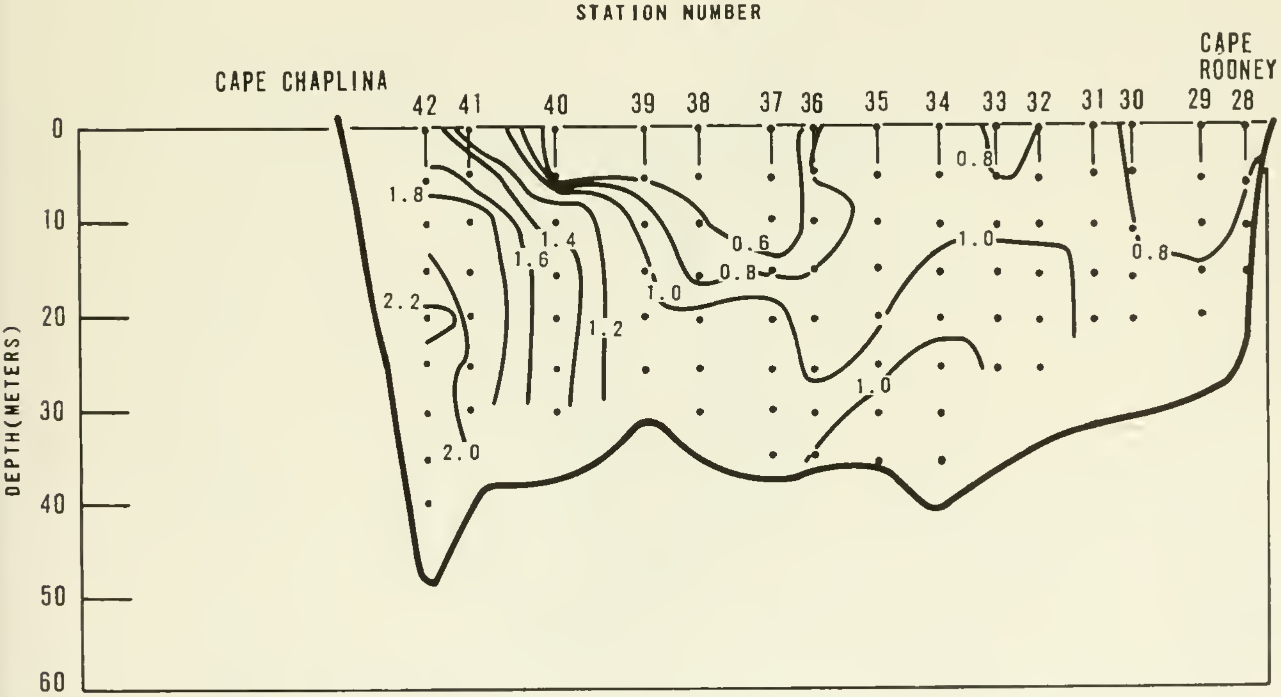

Figure 21. Vertical distribution of inorganic phosphate (μg-at/l) along section C–C′ during Arctic West, 17–18 June 1969. Contour interval is 0.2 μg-at/l.

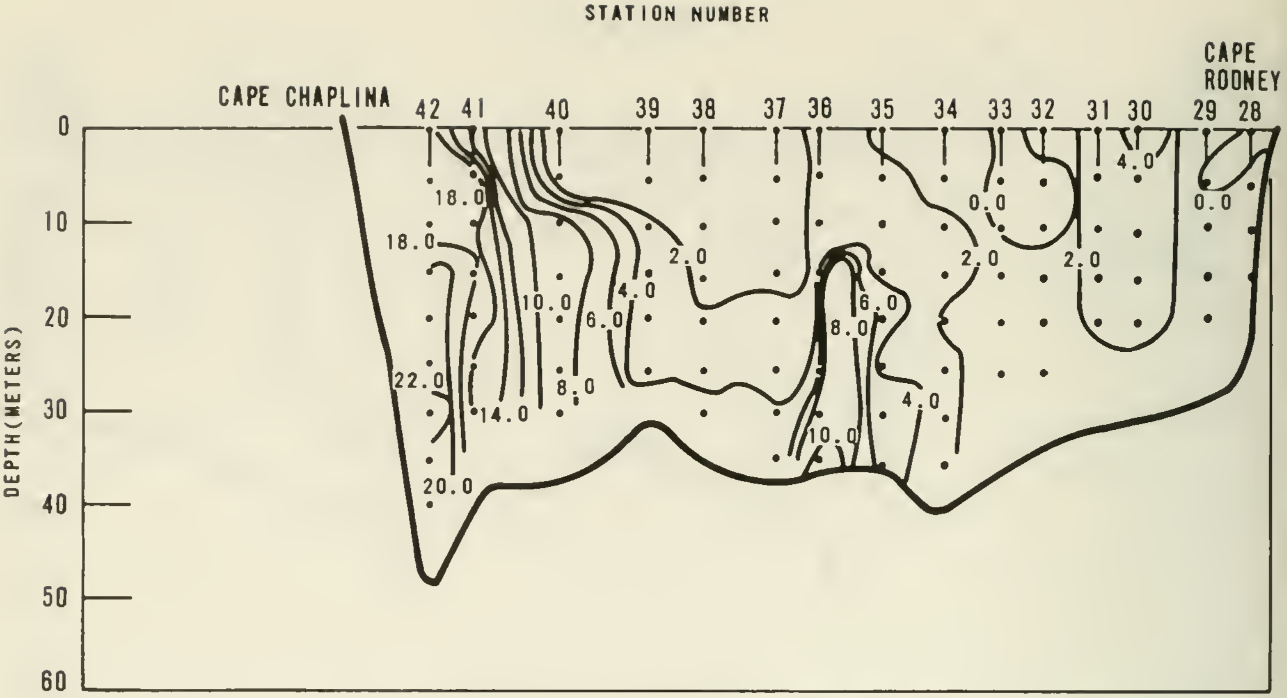

Figure 22. Vertical distribution of nitrate (µg-at/l) along section C–C′ during Arctic West, 17–18 June 1969. Contour interval is 2.0 µg-at/l.

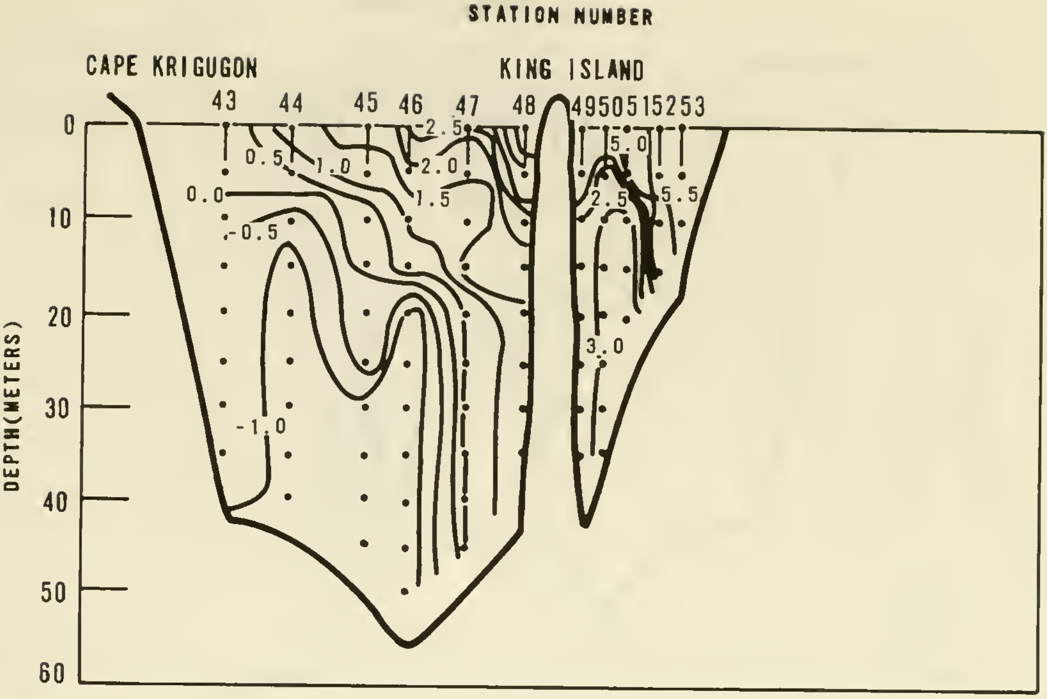

Figure 23. Vertical distribution of temperature (°C) along section D–D′ during Arctic West, 19 June 1969. Contour interval is 0.5°C.

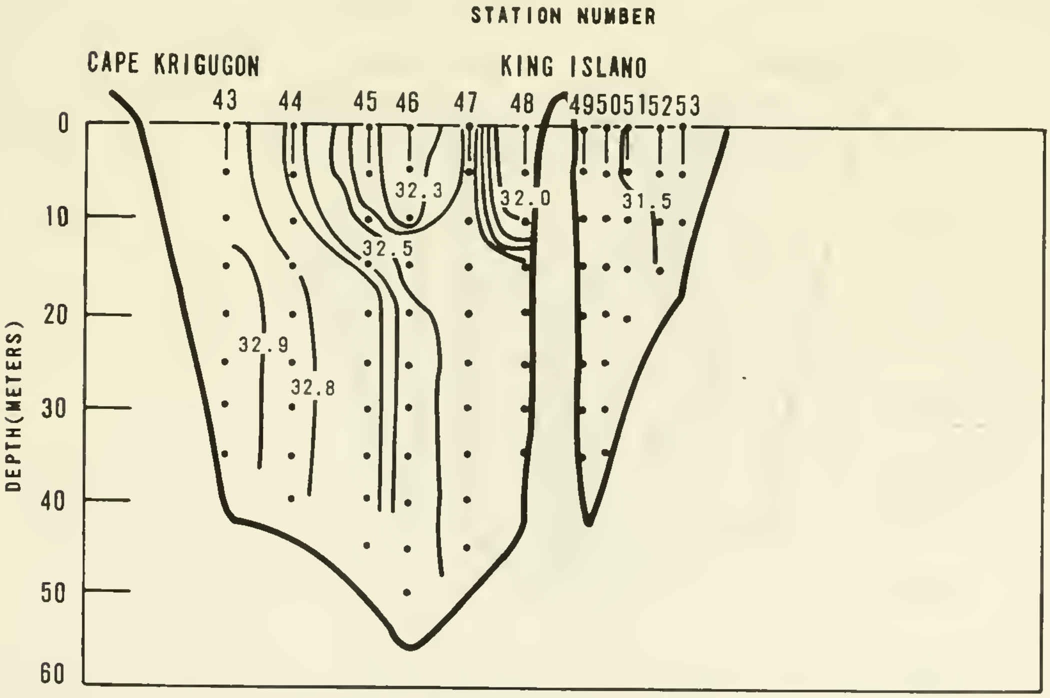

Figure 24. Vertical distribution of salinity (‰) along section D–D′ during Arctic West, 19 June 1969. Contour interval is 0.1‰ except between 31.5 and 32.0‰.

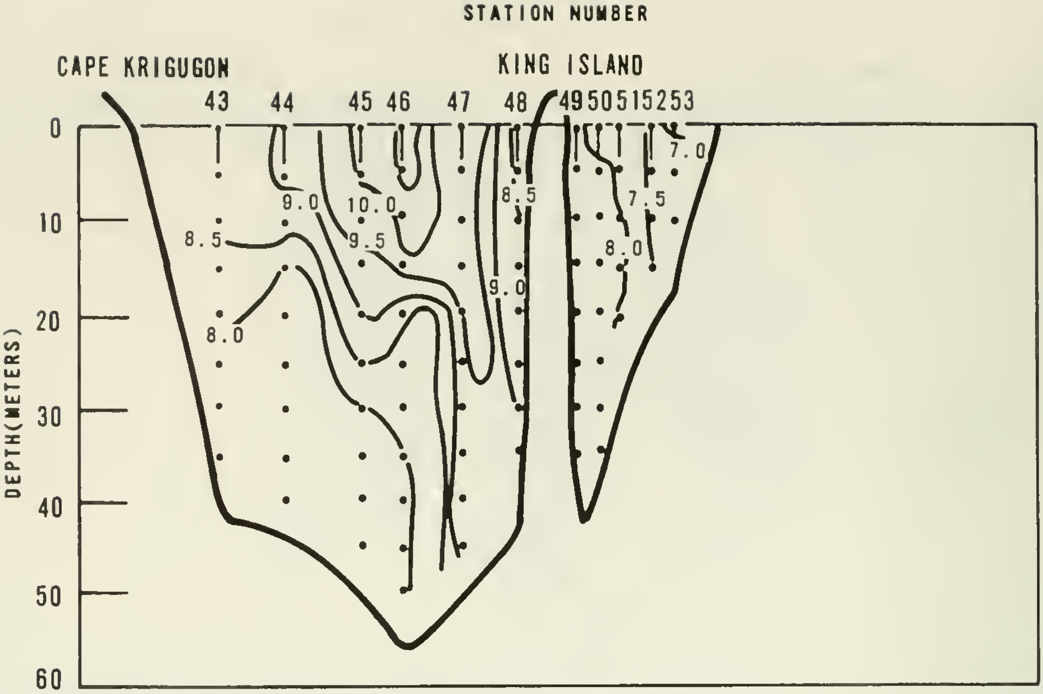

Figure 25. Vertical distribution of dissolved oxygen (ml/l) along section D–D′ during Arctic West, 19 June 1969. Contour interval is 0.5 ml/l.

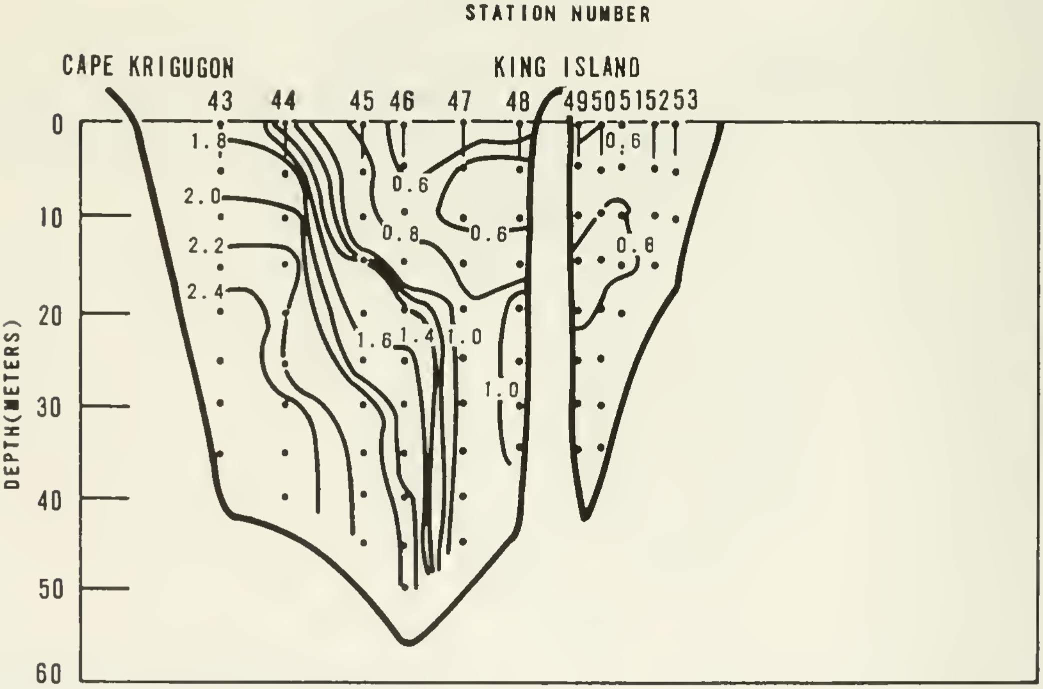

Figure 26. Vertical distribution of inorganic phosphate (µg-at/l) along section D–D′ during Arctic West, 19 June 1969. Contour interval is 0.2 µg-at/l.

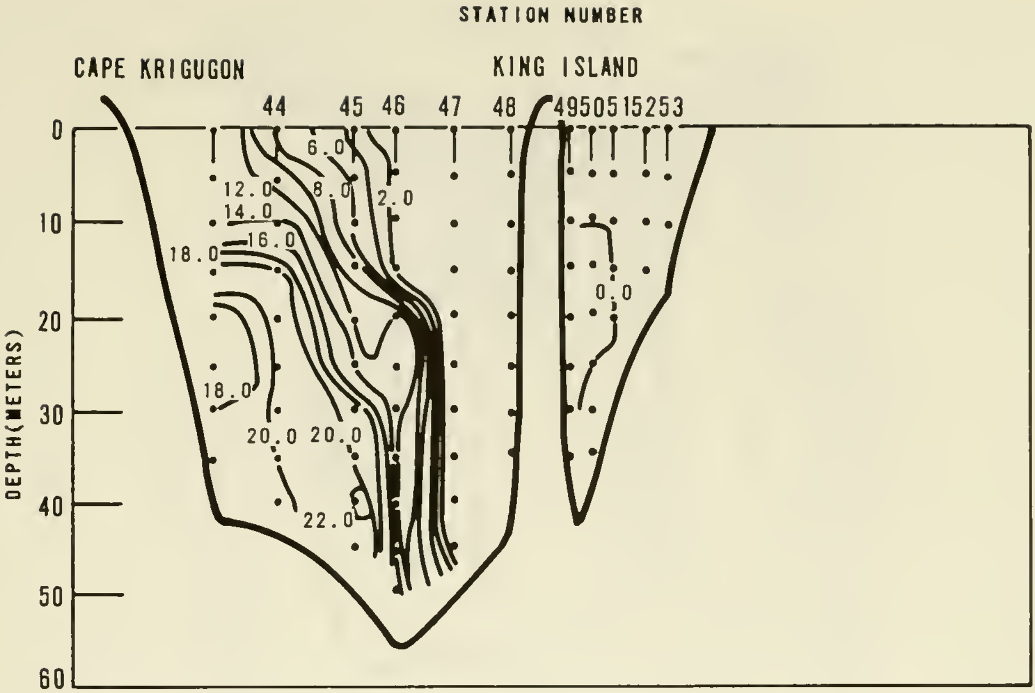

Figure 27. Vertical distribution of nitrate (μg-at/l) along section D–D′ during Arctic West, 19 June 1969. Contour interval is 2.0 μg-at/l.

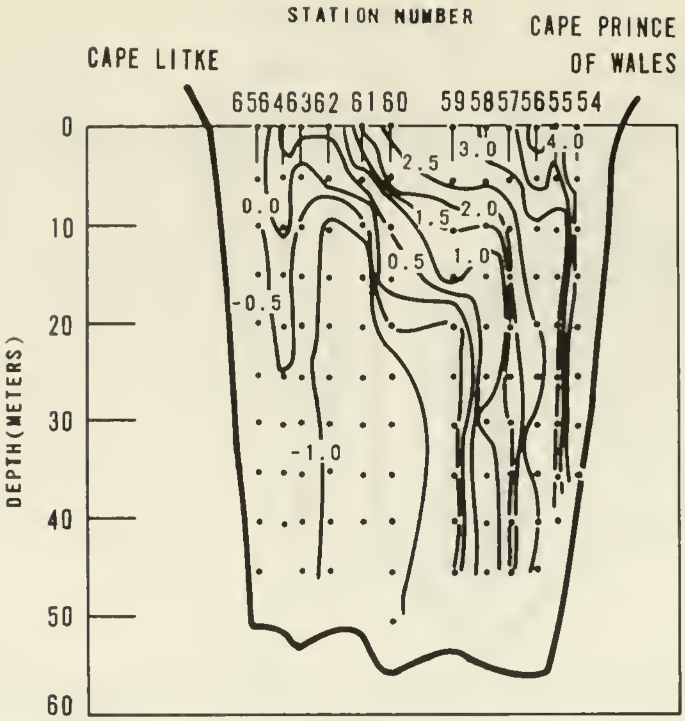

Figure 28. Vertical distribution of temperature (°C) along section E–E′ during Arctic West, 20 June 1969. Contour interval is 0.5°C.

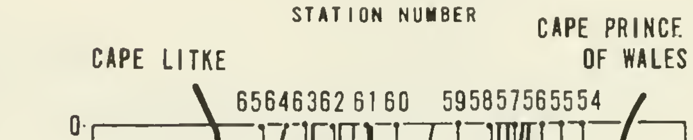

Figure 29. Vertical distribution of salinity (‰) along section E–E′ during Arctic West, 20 June 1969. Contour interval is 0.1‰.

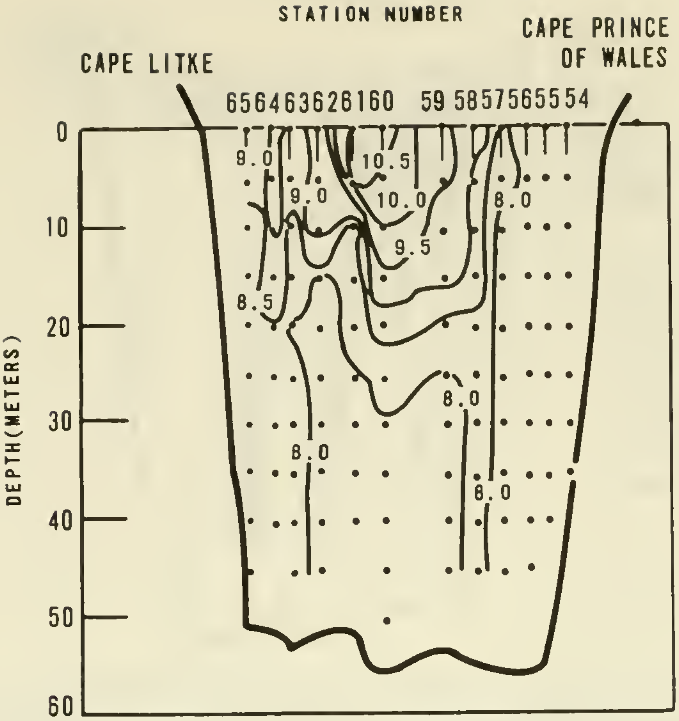

Figure 30. Vertical distribution of dissolved oxygen (ml/l) along section E–E′ during Arctic West, 20 June 1969. Contour interval is 0.5 ml/l.

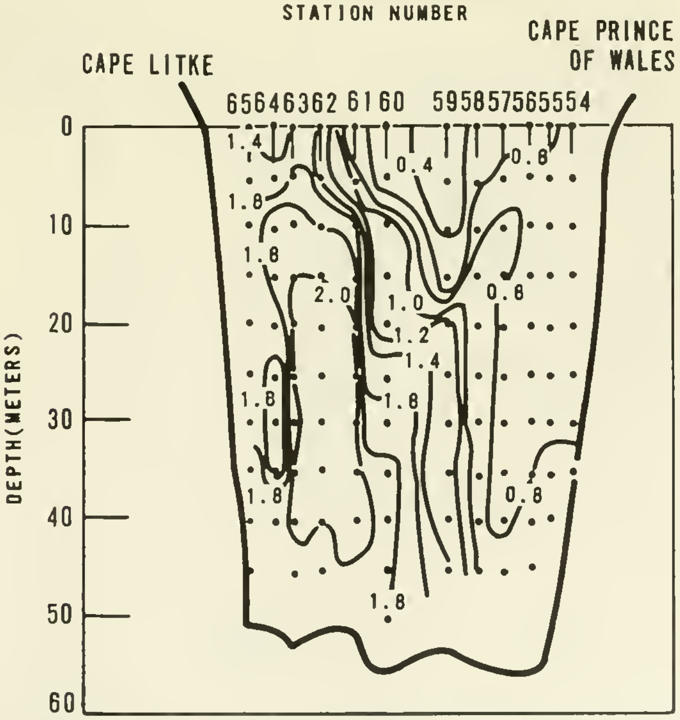

Figure 31. Vertical distribution of inorganic phosphate (μg-at/l) along section E–E′ during Arctic West, 20 June 1969. Contour interval is 0.2 μg-at/l.

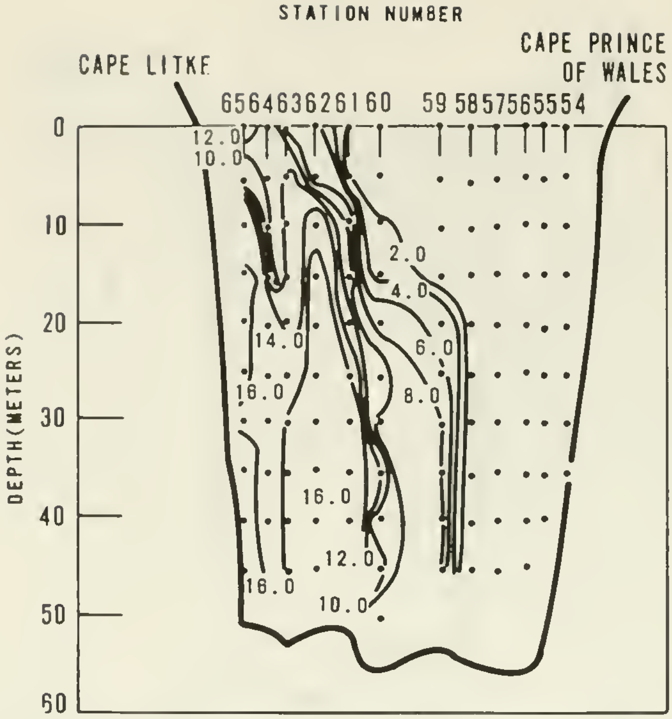

Figure 32. Vertical distribution of nitrate (μg-at/l) along section E–E′ during Arctic West, 20 June 1969. Contour interval is 2.0 μg-at/l.

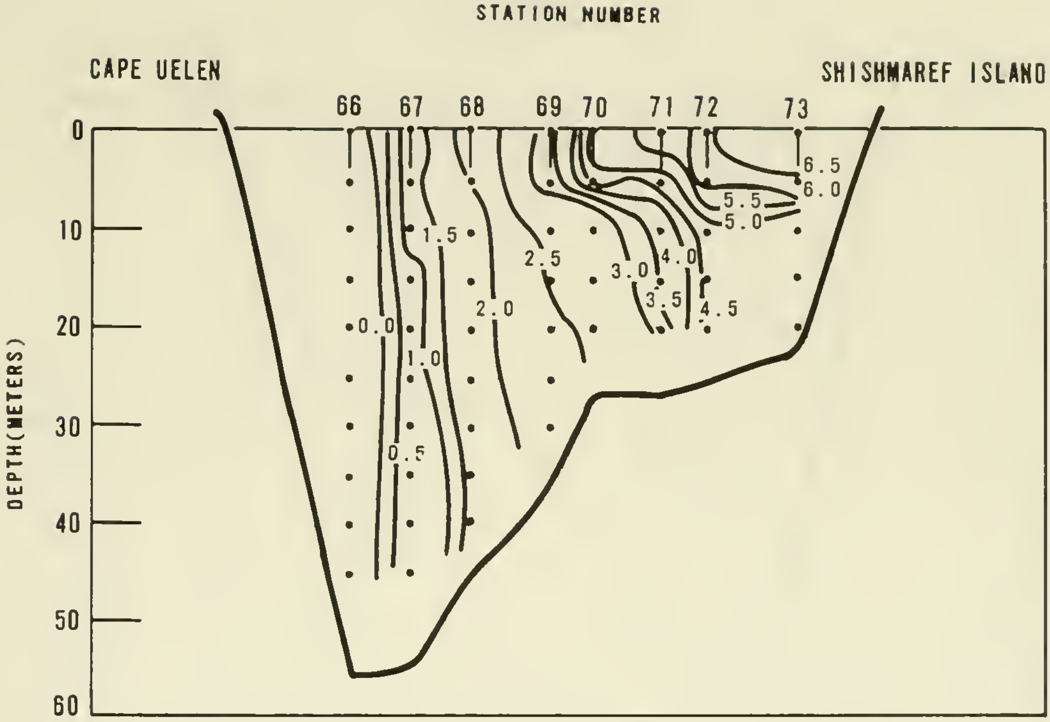

Figure 33. Vertical distribution of temperature (°C) along section F–F′ during Arctic West, 21 June 1969. Contour interval is 0.5°C.

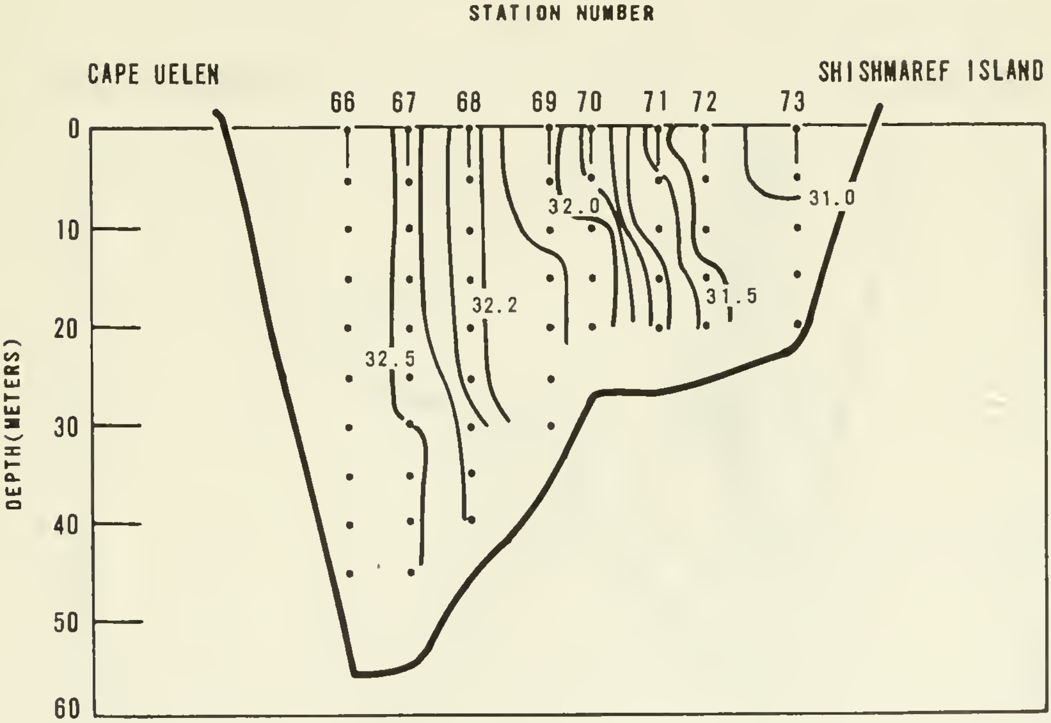

Figure 34. Vertical distribution of salinity (‰) along section F–F′ during Arctic West, 21 June 1969. Contour interval is 0.1‰ except between 31.0 and 32.0‰ where the interval is 0.5‰.

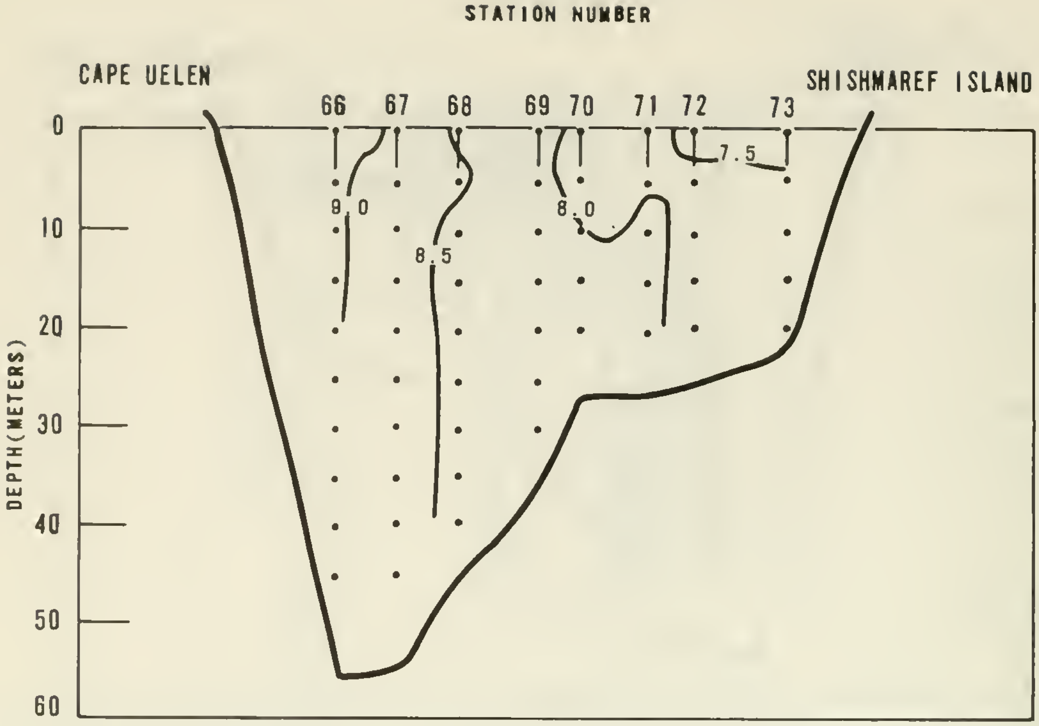

Figure 35. Vertical distribution of dissolved oxygen (ml/l) along section F–F′ during Arctic West, 21 June 1969. Contour interval is 0.5 ml/l.

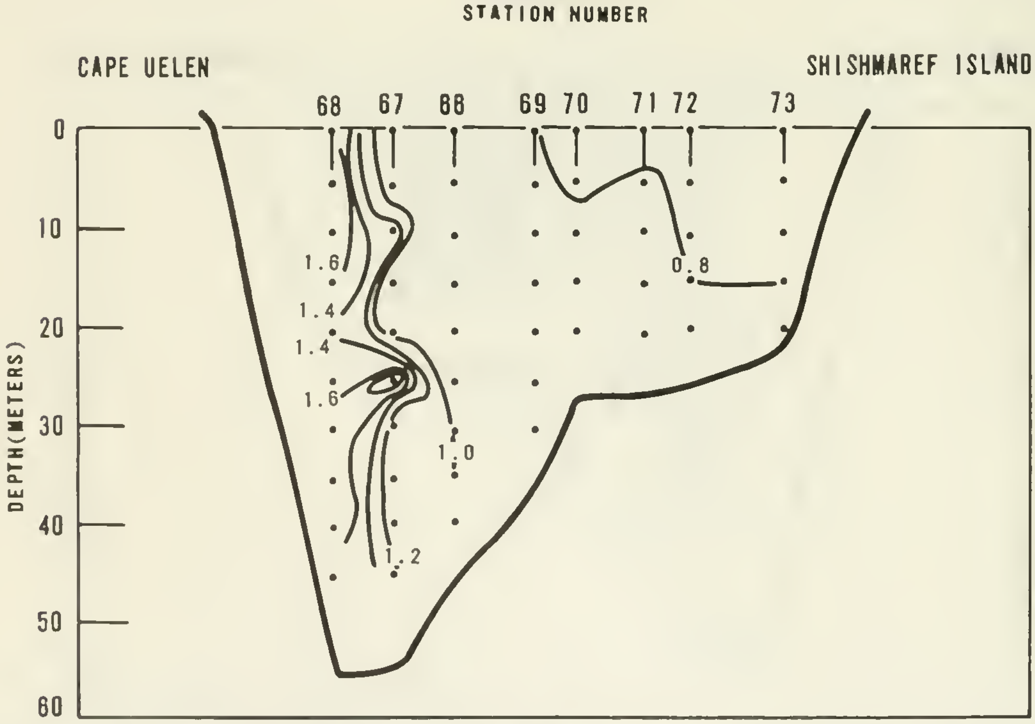

Figure 36. Vertical distribution of inorganic phosphate (μg-at/l) along section F–F′ during Arctic West, 21 June 1969. Contour interval is 0.2 μg-at/l.

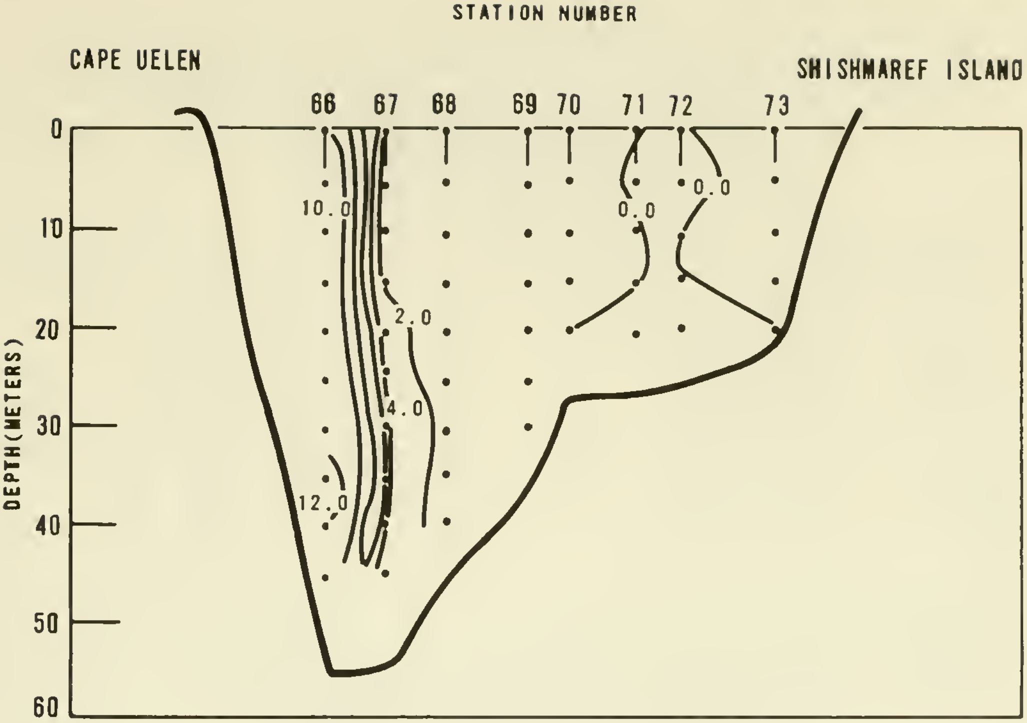

Figure 37. Vertical distribution of nitrate (μg-at/l) along section F–F′ during Arctic West, 21 June 1969. Contour interval is 2.0 μg-at/l.

Table 1. Observed and interpolated oceanographic data taken by USCGC NORTHWIND during 8–21 June 1969.

REFERENCE CTRY CODE / ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	DAY	HR. 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	AMT		NODC STATION NUMBER
311524	NW	64000N	172240W		234	42	06	14	190	1969	BS3	001	0055	2	16	0	2		X4	7	7		0001

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		23	S20	239	023	020	6	10	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. × 10³	SOUND VELOCITY	O$_2$ ml/l	PO$_4$–P µg-at/l	TOTAL–P µg-at/l	NO$_2$–N µg-at/l	NO$_3$–N µg-at/l	SiO$_4$–Si µg-at/l	pH	SCC
		STD	0000	0216	3154	2521	0027633	0000	14542	937							
190		OBS	0000	0216	31537	2521			14542	937	055		018	033			
190		OBS	0005	0212	31541	2522			14541	946	057		002				
		STD	0010	0210	3157	2525	0027334	0027	14542	954							
190		OBS	0010	0210	31571	2525			14542	954	059		076	048			
190		OBS	0015	-0005	32211	2588			14454	11260	073		004				
		STD	0020	-0093	3237	2604	0019731	0051	14417	978							
190		OBS	0020	-0093	32370	2604			14417	978	144		010	100			
190		OBS	0025	-0135	32472	2614			14399	843	216			175			
		STD	0030	-0165	3271	2634	0016948	0069	14389	799							
190		OBS	0030	-0165	32707	2634			14389	799	196		007	310			
190		OBS	0035	-0172	32841	2645			14388	760	211		012	306			
190		OBS	0040	-0173	32845	2645			14389	760	188		016	196			
190		OBS	0045	-0169	32843	2645			14391	751	176		008	250			

REFERENCE CTRY CODE / ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	DAY	HR. 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	AMT		NODC STATION NUMBER
311524	NW	63576N	172146W		234	32	06	14	227	1969	BS3	002	0055	2	18	0	2		X4	7	8		0002

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S10	254	034	032	6	11	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. × 10³	SOUND VELOCITY	O$_2$ ml/l	PO$_4$–P µg-at/l	TOTAL–P µg-at/l	NO$_2$–N µg-at/l	NO$_3$–N µg-at/l	SiO$_4$–Si µg-at/l	pH	SCC
		STD	0000	0254	3194	2551	0024817	0000	14565								
227		OBS	0000	0254	31944	2551			14565		041		032	040			
227		OBS	0005	0254	31949	2551			14565	944	074		003				
		STD	0010	0251	3196	2552	0024706	0025	14565	949							
227		OBS	0010	0251	31956	2552			14565	949	060		049				
227		OBS	0015	0098													
		STD	0020	-0143	3244	2611	0019066	0047	14394	931							
227		OBS	0020	-0143	32439	2611			14394	11140	139		002	109			
227		OBS	0025	-0166	32564	2622			14386	922	198		006	223			
		STD	0030	-0162	3269	2632	0017116	0065	14390	861							
227		OBS	0030	-0162	32686	2632			14390	861			007	190			
227		OBS	0035	-0168						822	194		008	160			
227		OBS	0040	-0168	32691	2632			14389	808	172		012	209			
227		OBS	0045	-0166	32699	2633			14391	791	188		012	206			
		STD	0050	-0170	3269	2632	0017044	0099	14390	790							
227		OBS	0050	-0170	32691	2632			14390	790	206		017	146			

REFERENCE CTRY CODE / ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	DAY	HR. 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	AMT		NODC STATION NUMBER
311524	NW	63523N	172112W		234	32	06	15	013	1969	BS3	003	0053	2	36	1			X4	X	9		0003

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		24	S07	256	072	061	5	10	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. × 10³	SOUND VELOCITY	O$_2$ ml/l	PO$_4$–P µg-at/l	TOTAL–P µg-at/l	NO$_2$–N µg-at/l	NO$_3$–N µg-at/l	SiO$_4$–Si µg-at/l	pH	SCC
		STD	0000	0221	3231	2583	0021794	0000	14555	951							
013		OBS	0000	0221	32311	2583			14555	951	078		011	019			
013		OBS	0005	0218	32313	2583			14555	956	070		003	070			
		STD	0010	0215	3232	2584	0021715	0022	14554	918							
013		OBS	0010	0215	32316	2584			14554	918	076		009	022			
013		OBS	0015	0183	32373	2591			14542	10990	064		006	008			
		STD	0020	0123	3242	2598	0020348	0043	14516	921							
013		OBS	0020	0123	32417	2598			14516	10800	113		009				
013		OBS	0025	-0127	32492	2615			14403	922	115		015	088			
		STD	0030	-0119	3259	2623	0017991	0062	14409	876							
013		OBS	0030	-0119	32586	2623			14409	876	152		009	127			
013		OBS	0035	-0109	32622	2625			14415	865	161		010	100			
013		OBS	0040	-0108	32627	2626			14416	855	157		005	093			
013		OBS	0045	-0104	32637	2626			14419	869	164		009	089			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DIGIT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	63517N	17156 W		234	31	06	15	038	1969	8S3	004	0044	2	00			0	X4	X	9		0004

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		20	S07	255	028	025	4	08	

MESSENGER TIME or HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0158	3219	2578	0022275	0000	14526	1004							
040		OBS	0000	0158	32192	2578			14526	1004	069		005	010			
040		OBS	0005	0158	32182	2577			14526	1020	063		007	046			
		STD	0010	0120	3220	2581	0022006	0022	14510	1009							
040		OBS	0010	0120	32197	2581			14510	1009	072		007				
040		OBS	0015	0005	32322	2597			14461	895	111		008	050			
		STD	0020	-0002	3232	2597	0020424	0043	14458	886							
040		OBS	0020	-0002	32323	2597			14458	886	113		010	051			
040		OBS	0025	-0002	32331	2598			14459	888	116		007	052			
		STD	0030	-0002	3233	2598	0020351	0064	14460	885							
040		OBS	T0030	-0002	32332	2598			14460	885	115		008	045			
040		OBS	0034	-0003	32321	2597			14460	883	122		006	049			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DIGIT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	63494N	17152 W		234	31	06	15	055	1969	8S3	005	0036	2	19	0	2		X1	6	6		0005

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		25	S10	253	022	020	7	06	

MESSENGER TIME or HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	ICC
		STD	0000	0176	3215	2573	0022732	0000	14533	938							
057		OBS	0000	0176	32147	2573			14533	938	061		006	003			
057		OBS	0005	0154	32154	2575			14524	931	067		002	004			
		STD	0010	0116	3219	2580	0022036	0022	14508	883							
057		OBS	0010	0116	32190	2580			14508	883	084		008				
057		OBS	0015	0109		•				884				016			
		STD	0020	0106	3222	2583	0021749	0044	14506	886							
057		OBS	0020	0106	32220	2583			14506	886	089		003	019			
057		OBS	0025	0104	32206	2582			14506	882	091		005	016			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DIGIT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	6253 N	169185W		233	29	06	15	169	1969	8S3	006	0044	2	02	0	2		X1	6	7		0006

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		03	S20	179	029	018	7	07	

MESSENGER TIME or HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	ICC
		STD	0000	0167	3201	2562	0023723	0000	14527	952							
170		OBS	0000	0167	32009	2562			14527	952	071		011	010			
170		OBS	0005	0167	32005	2562			14528	900	072		004	009			
		STD	0010	0163	3201	2563	0023690	0024	14527	902							
170		OBS	0010	0163	32010	2563			14527	902	085		006	013			
170		OBS	0015	0136	32070	2569			14517	896			015	015			
		STD	0020	0051	3215	2581	0021990	0047	14480	848							
170		OBS	0020	0051	32150	2581			14480	848	104		010	043			
170		OBS	0025	0029	32179	2584			14471	823	120		010	054			
		STD	0030	0028	3218	2584	0021678	0068	14472	824							
170		OBS	0030	0028	32176	2584			14472	824	119		013	050			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
311524		NW	6249 N	16900 W		233	29	06	15	198	1969	8S3	007	0044	2	03	1	2		X1	6	7		0007

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		01	S20	151	031	018	8	08	

MESSENGER TIME OR T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0130						899							
200		OBS	0000	0130						899	111		003	016			
200		OBS	0005	0129	32099	2572			14512	905	081		007	016			
		STD	0010	0127	3210	2572	0022793		14512	899							
200		OBS	0010	0127	32099	2572			14512	899	083		013	020			
200		OBS	0015	0126	32098	2572			14512	903	083		007	017			
		STD	0020	0112	3210	2573	0022689		14507	893							
200		OBS	0020	0112	32101	2573			14507	893	085		008	016			
200		OBS	0025	0085	32119	2576			14496	868	095		008	025			
		STD	0030	0058	3213	2579	0022175		14485	836							
200		OBS	T0030	0058						836	111		007	032			
200		OBS	0035	0050	32135	2580			14482	825	111		011	035			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
311524		NW	6245 N	168402W		233	28	06	15	221	1969	8S3	008	0042	2	03	2	2		X1	8	7		0008

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		01	S27	129	035	025	8	05	

MESSENGER TIME OR T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0148	3191	2556	0024358	0000	14517	850							
222		OBS	0000	0148	31910	2556			14517	850	089		006	010			
222		OBS	0005	0152	31913	2556			14520	846	069		007	011			
		STD	0010	0155	3192	2556	0024355	0024	14522	844							
222		OBS	0010	0155	31916	2556			14522	844	081		013	009			
222		OBS	0014	0142	31922	2557			14517	851	085		006	010			
222		OBS	0019	0126	31918	2558			14511	847	088		008	011			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
311524		NW	6239 N	16822 W		233	28	06	15	239	1969	BS3	009	0035	2	03	3	2		X1	3	7		0009

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		03	S25	109	043	033	7	06	

MESSENGER TIME OR T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0161	3185	2550	0024925	0000	14522	864							
241		OBS	0000	0161	31846	2550			14522	864	080		005	000			
241		OBS	0005	0159	31839	2549			14522	875	080		007	006			
		STD	0010	0159	3184	2550	0024935	0025	14523	866							
241		OBS	0010	0159	31843	2550			14523	866	096		003	007			
241		OBS	0014	0161	31843	2550			14524	879	095		001	001			
241		OBS	0019	0158	31843	2550			14524	879	093		001	006			
		STD	0020	0158	3184	2550	0024930	0050	14524	879							
241		OBS	0023	0159	31843	2550			14525	877	101		000	008			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT NODC 10	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR. 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	6235 N	168047W		233	28	06	16	014	1969	BS3	010	0031	2	05	2	2		X1	3	6		0010

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		01	520	095			7	05	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	ΣΔD DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0237	3191	2549	0024973	0000	14557	814							
016		OBS	0000	0237	31907	2549			14557	814	092		000	001			
016		OBS	0005	0234	31905	2549			14556	827	088		001	000			
		STD	0010	0237	3193	2551	0024800	0025	14559	831							
016		OBS	0010	0237	31960	25540				831	090		001	003			
016		OBS	0015	0235	31949	2553			14559	825	090		000	001			
		STD	0020	0208	3195	2555	0024452	0050	14548	826							
016		OBS	0020	0208	31949	2555			14548	826	092		000	001			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT NODC 10	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR. 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	62310N	16744 W		233	27	06	16	037	1969	BS3	011	0031	2	36	2	2		X1	3	6		0011

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		03	510	079	073	056	7	05	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	ΣΔD DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0304	3190	2543	0025575	0000	14586	806							
039		OBS	0000	0304	31895	2543			14586	806	080		001	002			
039		OBS	0005	0302						791	067		000	001			
		STD	0010	0300	3189	2543	0025622	0026	14585	798							
039		OBS	0010	0300	31885	2543			14585	798	085		002	003			
039		OBS	0015	0276	31925	2548			14576	805	089		001	001			
		STD	0020	0247	3199	2555	0024428	0051	14565	803							
039		OBS	0020	0247	31989	2555			14565	803	092		000	001			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT NODC 10	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR. 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	6226 N	16726 W		233	27	06	16	055	1969	BS3	012	0027	2	02	2	2		X1	4	6		0012

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		01	508	062	116	089	8	05	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	ΣΔD DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0473	3171	2512	0028535	0000	14655	766							
056		OBS	0000	0473	31705	2512			14655	766	085		000	000			
056		OBS	0005	0456	31709	2514			14649	770	087		000	001			
		STD	0010	0395	3180	2527	0027109	0028	14625	769							
056		OBS	0010	0395	31796	2527			14625	769	095		000	001			
056		OBS	0014	0218	32024	2560			14552	766	085		000	000			
056		OBS	0019	0231	32035	2560			14559	766	101		000	000			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	6222 N	16707 W		233	27	06	16	077	1969	BS3	013	0025	2	35	1	2		X1	4	6		0013

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		04	508	045	118	093	8	05	

MESSENGR TIME or T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0584	3213	2533	0026543	0000	14706	719							
078		OBS	0000	0584	32128	2533			14706	719	052		008	000			
078		OBS	0005	0582	32126	2533			14706	708	073		008	000			
		STD	0010	0559	3213	2536	0026280	0026	14698	712							
078		OBS	0010	0559	32127	2536			14698	712	073		010	000			
078		OBS	0015	0422	32069	2546			14641	737	090		005	000			
		STD	0020	0335	3205	2553	0024652	0052	14604	769							
078		OBS	0020	0335	32052	2553			14604	769	104		007	000			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	6217 N	16648 W		233	26	06	16	089	1969	BS3	014	0025	2	01	1	2		X1	6	7		0014

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		32	510	042	089	081	8	05	

MESSENGR TIME or T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0682	3233	2536	0026200	0000	14748	699							
090		OBS	0000	0682	32330	2536			14748	699	074		007	000			
090		OBS	0005	0674	32331	2538			14746	697	065		008	000			
		STD	0010	0675	3234	2538	0026028	0026	14747	701							
090		OBS	0010	0675	32343	2538			14747	701	073		006	000			
090		OBS	0014	0669	32343	2539			14746	701	070		006	000			
090		OBS	0019	0672	32364	2540			14748	697	074		006	000			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	63194N	168390W		233	38	06	16	167	1969	BS3	015	0031	2	34	2	2		X1	6	7		0015

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		30	515	019	044	033	7	05	

MESSENGR TIME or T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O_2 ml/l	PO_4-P µg-at/l	TOTAL-P µg-at/l	NO_2-N µg-at/l	NO_3-N µg-at/l	SiO_4-Si µg-at/l	pH	SCC
		STD	0000	0198	3187	2549	0024959	0000	14539	818							
170		OBS	0000	0198	31873	2549			14539	818	109		008	000			
170		OBS	0005	0196	31871	2549			14539	824	112		008	000			
		STD	0010	0196	3187	2549	0024999	0025	14540	823							
170		OBS	0010	0196	31866	2549			14540	823	111		009	001			
170		OBS	0015	0193	31895	2552			14540	821	108		013	001			
		STD	0020	0184	3192	2554	0024517	0050	14537	825							
170		OBS	0020	0184	31919	2554			14537	825	108		011	000			

REFERENCE CTRY CODE	ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	1°	STATION TIME (GMT) MO	DAY	HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYP	AMT		NODC STATION NUMBER
311524		NW	63240N	168210W		233	38	06	16	199	1969	8S3	016	0025	2	02	1	2		X1	4	6		0016

WATER COLOR CODE	TRANS. (m)	WIND DIR.	SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		07	S07	033	040	035	8	04	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	TCC
		STD	0000	0207	3190	2551	0024792	0000	14543	868							
200		OBS	0000	0207	31903	2551			14543	868	083		010	000			
200		OBS	0005	0186	31906	2553			14535	868	084		001	006			
		STD	0010	0141	3200	2563	0023630	0024	14517	832							
200		OBS	0010	0141	32000	2563			14517	832	116		011	000			
200		OBS	0015	0136	32010	2565			14516	832	110		012	006			

REFERENCE CTRY CODE	ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	1°	STATION TIME (GMT) MO	DAY	HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYP	AMT		NODC STATION NUMBER
311524		NW	63292N	168030W		233	38	06	16	219	1969	8S3	017	0033	2	36	0	2		X1	6	7		0017

WATER COLOR CODE	TRANS. (m)	WIND DIR.	SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		19	S16	055	053	047	8	06	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	TCC
		STD	0000	0183	3200	2561	0023887	0000	14534	864							
221		OBS	0000	0183	32001	2561			14534	864	093		011	002			
221		OBS	0005	0171	31998	2561			14530	868	088		007	000			
		STD	0010	0155	3201	2563	0023655	0024	14523	852							
221		OBS	0010	0155	32008	2563			14523	852	101		007	002			
221		OBS	0014	0153	32001	2563			14523	864	098		006	000			
221		OBS	0019	0151	31996	2563			14523	857	096		010	004			
		STD	0020	0151	3200	2563	0023721	0047	14523	857							
221		OBS	0024	0151	31997	2563			14524	857	106		004	002			

REFERENCE CTRY CODE	ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	1°	STATION TIME (GMT) MO	DAY	HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYP	AMT		NODC STATION NUMBER
311524		NW	63352N	167455W		233	37	06	17	011	1969	8S3	018	0030	2	32	0	2		X1	3	6		0018

WATER COLOR CODE	TRANS. (m)	WIND DIR.	SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		18	S11	060			8	05	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	TCC
		STD	0000	0242	3197	2554	0024539	0000	14560	843							
010		OBS	0000	0242	31969	2554			14560	843	090		010	000			
010		OBS	0005	0222	31968	2555			14552	844	091		006	002			
		STD	0010	0199	3197	2557	0024215	0024	14542	850							
010		OBS	0010	0199	31972	2557			14542	850	097		008	000			
010		OBS	0015	0180	31977	2559			14535	832	102		010	003			
		STD	0020	0164	3199	2561	0023818	0048	14529	833							
010		OBS	0020	0164	31994	2561			14529	833	112		008	001			

Reference Ctry Code	Reference ID No.	Ship Code	Latitude ° 1/10	Longitude ° 1/10	Drift Indctr	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) Mo	Station Time (GMT) Day	Station Time (GMT) Hr. 1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir.	Wave Observations Hgt	Wave Observations Per	Wave Observations Sea	Weather Code	Cloud Codes Type	Cloud Codes Amt		NODC Station Number
31	1524	NW	63418N	167300W		233	37	06	17	037	1969	BS3	019	0030	2	32	2	3		X1	3	6		0019

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mbs)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		02	S08	065	102	083	8	04	

Messenger Time or Hr 1/10	Cast No.	Card Type	Depth (m)	t °C	S ‰	Sigma-T	Specific Volume Anomaly×10⁵	Σ Δ D Dyn. M. × 10³	Sound Velocity	O₂ ml/l	PO₄-P μg-at/l	Total-P μg-at/l	NO₂-N μg-at/l	NO₃-N μg-at/l	SiO₄-Si μg-at/l	pH	SCC
		STD	0000	0380	3191	2537	0026115	0000	14619	830							
		STD	0000	0380	3191	2537	0026115	0000	14619	830							
037		OBS	0000	0380	31909	2537			14619	830	085		014	004			
037		OBS	0005	0258	31931	2550			14567	835	102		019	000			
		STD	0010	0198	3197	2557	0024238	0025	14542	841							
037		OBS	0010	0198	31968	2557			14542	841	102		008	000			
037		OBS	0015	0177	31972	2559			14533	839	112		010	003			

Reference Ctry Code	Reference ID No.	Ship Code	Latitude ° 1/10	Longitude ° 1/10	Drift Indctr	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) Mo	Station Time (GMT) Day	Station Time (GMT) Hr. 1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir.	Wave Observations Hgt	Wave Observations Per	Wave Observations Sea	Weather Code	Cloud Codes Type	Cloud Codes Amt		NODC Station Number
31	1524	NW	63460N	167100W		233	37	06	17	053	1969	8S3	020	0031	2	35	1	2		X1	8	7		0020

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mbs)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		06	S08	065	113	090	8	05	

Messenger Time or Hr 1/10	Cast No.	Card Type	Depth (m)	t °C	S ‰	Sigma-T	Specific Volume Anomaly×10⁵	Σ Δ D Dyn. M. × 10³	Sound Velocity	O₂ ml/l	PO₄-P μg-at/l	Total-P μg-at/l	NO₂-N μg-at/l	NO₃-N μg-at/l	SiO₄-Si μg-at/l	pH	SCC
		STD	0000	0630	3022	2377	0041399	0000	14700	760							
055		OBS	0000	0630	30217	2377			14700	760	065		013	000			
055		OBS	0005	0562	30300	2391			14674	769	067		009	000			
		STD	0010	0274	3175	2534	0026448	0034	14572	848							
055		OBS	0010	0274	31749	2534			14572	848	102		011	003			
055		OBS	0015	0176	31951	2557			14533	860	085		010	001			
		STD	0020	0159	3199	2561	0023847	0059	14526	850							
055		OBS	0020	0159	31986	2561			14526	850	102		011	000			

Reference Ctry Code	Reference ID No.	Ship Code	Latitude ° 1/10	Longitude ° 1/10	Drift Indctr	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) Mo	Station Time (GMT) Day	Station Time (GMT) Hr. 1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir.	Wave Observations Hgt	Wave Observations Per	Wave Observations Sea	Weather Code	Cloud Codes Type	Cloud Codes Amt		NODC Station Number
31	1524	NW	63495N	166510W		233	36	06	17	065	1969	8S3	021	0031	2	33	1	2		X1	8	6		0021

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mbs)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		04	S10	060	100	089	8	05	

Messenger Time or Hr 1/10	Cast No.	Card Type	Depth (m)	t °C	S ‰	Sigma-T	Specific Volume Anomaly×10⁵	Σ Δ D Dyn. M. × 10³	Sound Velocity	O₂ ml/l	PO₄-P μg-at/l	Total-P μg-at/l	NO₂-N μg-at/l	NO₃-N μg-at/l	SiO₄-Si μg-at/l	pH	SCC
		STD	0000	0702	3008	2357	0043299	0000	14727	760							
067		OBS	0000	0702	30077	2357			14727	760	051		005	001			
067		OBS	0005	0606	30053	2367			14689	764	057		005	001			
		STD	0010	0411	3120	2478	0031789	0038	14624	783							
067		OBS	0010	0411	31195	2478			14624	783	070		009	002			
067		OBS	0015	0230	31793	2541			14554	848	085		006	002			
		STD	0020	0147	3200	2563	0023681	0065	14521	848							
067		OBS	0020	0147	31998	2563			14521	848	099		010	000			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	63568N	166376W		233	36	06	17	082	1969	BS3	022	0031	2	32	1	2		X1	8	6		0022

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		05	S23	060	108	093	8	05	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0660	3076	2416	0037701	0000	14719	754							
082		OBS	0000	0660	30757	2416			14719	754	067		005	000			
082		OBS	0005	0631	30787	2422			14709	754	066		004	004			
		STD	0010	0295	3147	2510	0028723	0033	14578	840							
082		OBS	0010	0295	31470	2510			14578	840	072		005	000			
082		OBS	0015	0190	31819	2546			14537	830	111		006	000			
		STD	0020	0186	3182	2546	0025305	0060	14536	821							
082		OBS	0020	0186	31817	2546			14536	821	104		007	000			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	64023N	166185W		233	46	06	17	112	1969	BS3	023	0027	2	05	0	2		X1	8	4		0023

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		11	S18	061	093	082	8	04	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0690	3053	2394	0039732	0000	14728	738							
114		OBS	0000	0690	30534	2394			14728	738	070		007	000			
114		OBS	0005	0488	30879	2445			14651	775	077		007	000			
		STD	0010	0348	3133	2494	0030245	0035	14599	799							
114		OBS	0010	0348	31326	2494			14599	799	080		008	000			
114		OBS	0015	0157	31951	2559			14524	848	083		007	000			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	64080N	16600 W		233	46	06	17	124	1969	BS3	024	0024	2	04	0	2		X1	8	2		0024

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		12	S20	059	094	083	8	04	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0806	2885	2247	0053784	0000	14752	717							
125		OBS	0000	0806	28851	2247			14752	717	057		005	000			
125		OBS	0005	0581	30820	2430			14689	749	065		006	000			
		STD	0010	0255	3149	2515	0028268	0041	14560	841							
125		OBS	0010	0255	31490	2515			14560	841	095		007	000			
125		OBS	0015	0246	31519	2518			14558	848	092		009	001			

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA-THER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	64134N	165394W		233	45	06	17	136	1969	BS3	025	0022	2	10	0	2		X1	3	3		0025

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		09	S15	064			7	04	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0679	2943	2309	0047908	0000	14709	751							
138		OBS	0000	0679	29425	2309			14709	751	065		007	002			
138		OBS	0005	0538	29863	2360			14658	753			005	000			
		STD	0010	0421	3099	2461	0033398	0041	14625	746							
138		OBS	0010	0421	30994	2461			14625	746	090		006	002			
138		OBS	0015	0415	31097	2470			14625	751	101		011	004			

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA-THER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	64190N	165228W		233	45	06	17	149	1969	BS3	026	0022	2	10	0	2		X1	6	7		0026

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		06	S15	069	094	088	8	04	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0745	3062	2394	0039760	0000	14751	710							
151		OBS	0000	0745	30622	2394			14751	710	076		007	001			
151		OBS	0005	0587	31193	2459			14696	706	117		010	002			
		STD	0010	0586	3120	2459	0033565	0037	14696	701							
151		OBS	0010	0586	31196	2459			14696	701	127		011	002			
151		OBS	0015	0584	31197	2459			14696	698	133		005	004			

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA-THER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	64237N	165080W		233	45	06	17	160	1969	BS3	027	0028	2	10	0	2		X1	8	6		0027

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		10	S18	075	107	096	8	05	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0822	3099	2412	0038056	0000	14786	693							
161		OBS	0000	0822	30987	2412			14786	693	099		009	000			
161		OBS	0005	0763	31007	2422			14764	701	111		010	000			
		STD	0010	0716	3105	2431	0036212	0037	14747	690							
161		OBS	0010	0716	31049	2431			14747	690	122		011	000			
161		OBS	0015	0712	31064	2433			14746	693	133		007	001			
		STD	0020	0710	3107	2434	0035976	0073	14746	692							
161		OBS	0020	0710	31072	2434			14746	692	142		007	000			

Reference Ctry Code	Reference ID No.	Ship Code	Latitude ° 1/10	Longitude ° 1/10	Digit in Oct'n	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) MO	Station Time (GMT) DAY	Station Time (GMT) HR.1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir	Wave Observations Hgt	Wave Observations Per	Wave Observations Sea	Weather Code	Cloud Codes Type	Cloud Codes Amt		NODC Station Number
31	1524	NW	64364N	16635 W		233	46	06	17	214	1969	8S3	028	0025	2	13	0	2		X1	8	4		0028

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mb)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		13	S18	072	106	094	8	04	

Messenger Time HR 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁵	Σ Δ D Dyn. M. × 10³	Sound Velocity	O₂ ml/l	PO₄-P µg-at/l	Total-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0757	3021	2360	0043008	0000	14750	715							
216		08S	0000	0757	30208	2360			14750	715	069		008	000			
216		08S	0005	0602	31038	2445			14700	710	100		009	000			
		STD	0010	0603	3105	2446	0034822	0039	14702	708							
216		08S	0010	0603	31054	2446			14702	708	099		007	001			
216		08S	0014	0600	31054	2446			14701	707	090		008	000			

Reference Ctry Code	Reference ID No.	Ship Code	Latitude ° 1/10	Longitude ° 1/10	Digit in Oct'n	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) MO	Station Time (GMT) DAY	Station Time (GMT) HR.1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir	Wave Observations Hgt	Wave Observations Per	Wave Observations Sea	Weather Code	Cloud Codes Type	Cloud Codes Amt		NODC Station Number
31	1524	NW	64327N	166539W		233	46	06	17	234	1969	8S3	029	0028	2	09	0	2		X1	8	4		0029

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mb)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		11	S12	071	094	084	8	05	

Messenger Time HR 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁵	Σ Δ D Dyn. M. × 10³	Sound Velocity	O₂ ml/l	PO₄-P µg-at/l	Total-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0626						762							
235		08S	0000	0626						762	071		008	001			
235		08S	0005	0622	31132	2450			14709	744	077		006	000			
		STD	0010	0458	3163	2508	0028935		14649	804							
235		08S	0010	0458	31633	2508			14649	804	072		009	032			
235		08S	0015	0217	31870	2548			14550	834	082		009				
		STD	0020	0207	3187	2549	0025022		14546	820							
235		08S	0020	0207	31873	2549			14546	820	084		008	034			

Reference Ctry Code	Reference ID No.	Ship Code	Latitude ° 1/10	Longitude ° 1/10	Digit in Oct'n	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) MO	Station Time (GMT) DAY	Station Time (GMT) HR.1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir	Wave Observations Hgt	Wave Observations Per	Wave Observations Sea	Weather Code	Cloud Codes Type	Cloud Codes Amt		NODC Station Number
31	1524	NW	64288N	167150W		233	47	06	18	017	1969	8S3	030	0031	2	08	0	2		X1	3	2		0030

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mb)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		09	S14	064	090	084	8	05	

Messenger Time HR 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁵	Σ Δ D Dyn. M. × 10³	Sound Velocity	O₂ ml/l	PO₄-P µg-at/l	Total-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0590	3135	2471	0032438	0000	14698	755							
019		08S	0000	0590	31351	2471			14698	755	073		011	052			
019		08S	0005	0575	31356	2473			14693	757	070		008	022			
		STD	0010	0481	3142	2488	0030782	0032	14656	764							
019		08S	0010	0481	31418	2488			14656	764	073		011	027			
019		08S	0015	0225	31892	2549			14554	7910	082		007	029			
		STD	0020	0220	3190	2550	0024877	0059	14552	764							
019		08S	0020	0220	31904	2550			14552	764	085		011	033			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	64255N	167324W		233	47	06	18	030	1969	BS3	031	0031	2	08	0	2		X1	3	3		0031

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mb)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		10	S09	063	086	074	8	05	

MESSENGER TIME OR HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ ΔD DYN. M. × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0368	3195	2542	0025677	0000	14614	801							
031		OBS	0000	0368	31953	2542			14614	801	083		013	034			
031		OBS	0005	0340	31956	2545			14603	860	084		008	032			
		STD	0010	0275	3194	2549	0024978	0025	14575	843							
		STD	0010	0275	3194	2549	0024978	0025	14575	843							
031		OBS	0010	0275	31944	2549			14575	843	084		009	031			
031		OBS	0015	0193	32018	2561			14541	859	089		013	024			
		STD	0020	0182	3203	2563	0023684	0050	14537	846							
031		OBS	0020	0182	32027	2563			14537	846	095		012	038			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	6421 N	16752 W		233	47	06	18	043	1969	BS3	032	0034	2	09	0	2		X1	0	3		0032

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mb)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		11	S06	062	114	088	8	06	

MESSENGER TIME OR HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ ΔD DYN. M. × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0376	3206	2549	0024970	0000	14619	818							
045		OBS	0000	0376	32056	2549			14619	818	088		011	000			
045		OBS	0005	0334	32068	2554			14602	824	091		015	000			
		STD	0010	0254	3209	2562	0023743	0024	14568	829							
045		OBS	0010	0254	32086	2562			14568	829	094		014	000			
045		OBS	0015	0185	32071	2566			14538	827	103		013	002			
		STD	0020	0167	3207	2567	0023275	0048	14531	822							
045		OBS	0020	0167	32068	2567			14531	822	106		012	002			
045		OBS	0025	0167	32066	2567			14532	820	102		012	004			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	64175N	168188W		233	48	06	18	058	1969	BS3	033	0036	2	00	0	X		X1	8	6		0033

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mb)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		29	S04	060	064	054	8	06	

MESSENGER TIME OR HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ ΔD DYN. M. × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0371	3150	2505	0029154	0000	14609	804							
058		OBS	0000	0371	31496	2505			14609	804	074		009	000			
058		OBS	0005	0322	31492	2509			14589	822	080		013	000			
		STD	0010	0160	3196	2559	0024051	0027	14525	825							
058		OBS	0010	0160	31960	2559			14525	825	097		011	000			
058		OBS	0015	0118	32057	2569			14508	819	106		017	010			
		STD	0020	0116	3206	2570	0023040	0050	14508	814							
058		OBS	0020	0116	32058	2570			14508	814							
058		OBS	0025	0116	32054	2569			14509	811	104		014	008			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	64150N	168300W		233	48	06	18	071	1969	BS3	034	0041	2	07	1	2		X1	8	6		0034

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		31	S04	060			8	08	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0326	3201	2550	0024885	0000	14597	872							
071		OBS	0000	0326	32010	2550			14597	872	090		012	047			
071		OBS	0005	0190	32154	2573			14540	916	094		005	018			
		STD	0010	0089	3223	2585	0021580	0023	14497	924							
071		OBS	0010	0089	32230	2585			14497	924	084		003	023			
071		OBS	0014	0073	32226	2586			14490	921	101		002	029			
071		OBS	0019	0069	32232	2586			14489	917	108		009	015			
		STD	0020	0069	3223	2586	0021442	0045	14489	916							
071		OBS	0024	0070	32242	2587			14491	910	097		006	028			
071		OBS	0029		32249					903	098		005	025			
		STD	0030	0088	3225	2587	0021418	0066	14500	901							
071		OBS	0034	0111	32262	2586			14511	893	102		002	029			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	64092N	168510W		233	48	06	18	087	1969	BS3	035	0036	2					X8	6	7		0035

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		07	S08	055	066	051	7	08	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0164	3234	2589	0021165	0000	14530	939							
089		OBS	0000	0164	32343	2589			14530	939	091		011	016			
089		OBS	0005	0131	32344	2592			14516	945	089		004	021			
		STD	0010	0089	3234	2594	0020757	0021	14498	957							
089		OBS	0010	0089	32338	2594			14498	957	088		006	026			
089		OBS	0015	0043	32340	2596			14478	957	096		005	021			
		STD	0020	0032	3234	2597	0020455	0042	14474	920							
089		OBS	0020	0032	32339	2597			14474	920	100		002	041			
089		OBS	0025	0031						907	095		006	038			
		STD	0030	0032	3235	2598	0020384	0062	14476	906							
089		OBS	0030	0032	32348	2598			14476	906	110		002	051			
089		OBS	0035	0048	32344	2596			14484	899	114		012	043			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
31	1524	NW	64048N	169134W		233	49	06	18	106	1969	BS3	036	0036	2	09	0	2		X1	6	7		0036

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		04	S07	050	035	032	7	08	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0204	3233	2586	0021530	0000	14548	925							
108		OBS	0000	0204	32330	2586			14548	925	081		015	042			
108		OBS	0005	0167	32332	2588			14532	916	095		013	031			
		STD	0010	0101	3234	2593	0020838	0021	14504	888							
108		OBS	0010	0101	32336	2593			14504	888	067		009	030			
108		OBS	0015	0071	32332	2594			14491	885	094		008	092			
		STD	0020	0066	3234	2595	0020594	0042	14490	884							
108		OBS	0020	0066	32343	2595			14490	884	093		009				
108		OBS	0025	0066	32336	2595			14490	885	094		010	090			
108		OBS	T0029	0067	32339	2595			14491	887	113		012	099			
		STD	0030	0067	3234	2595	0020620	0063	14492	887							
108		OBS	0035	0067	32344	2595			14492	888	097		017	123			

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	64024N	169304W		233	49	06	18	119	1969	BS3	037	0038	2	10	0	2		X1	6	7		0037

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		05	S08	048	033	030	8	08	

MESSENGR TIME OR T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0245	3204	2559	0024061	0000	14562	928							
120		OBS	0000	0245	32035	2559			14562	928	058		005	000			
120		OBS	0005	0245	32033	2559			14563	924	056		007	001			
		STD	0010	0238	3205	2561	0023905	0024	14561	919							
120		OBS	0010	0238	32049	2561			14561	919	053		005	000			
120		OBS	0015	0137	32210	2581			14519	9660	076		007	006			
		STD	0020	0022	3239	2601	0020034	0046	14470	906							
120		OBS	0020	0022	32388	2601			14470	906	108		012	026			
120		OBS	0025	0001	32389	2602			14461	904	112		012	026			
		STD	0030	0000	3239	2603	0019909	0066	14462	899							
120		OBS	0030	0000	32391	2603			14462	899	086		009	041			
120		OBS	0035	0000	32411	2604			14463	898	115		013	034			

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	64065N	169584W		233	49	06	18	136	1969	BS3	038	0035	2	09	0	X		X1	6	6		0038

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		15	S06	045	072	056	8	07	

MESSENGR TIME OR T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0311	3159	2518	0027932	0000	14585	845							
138		OBS	0000	0311	31591	2518			14585	845	056		008	004			
138		OBS	0005	0310	31601	2519			14585	870	056		006	003			
		STD	0010	0230	3200	2558	0024196	0026	14557	897							
138		OBS	0010	0230	32003	2558			14557	897	060		009	004			
138		OBS	0015	0191	32053	2564			14541	914	062		008	004			
		STD	0020	0054	3232	2594	0020716	0049	14484	908							
138		OBS	0020	0054	32319	2594			14484	908	102		009	029			
138		OBS	0025		32361					906	114		011	029			
		STD	0030		3236					903							
138		OBS	0030		32358					903	102		015	042			

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	64095N	170238W		234	40	06	18	152	1969	BS3	039	0031	2	09	0	2		X4	9	3		0039

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		13	S15	044	033	033	2	07	

MESSENGR TIME OR T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0211	3213	2569	0023104	0000	14548	964							
154		OBS	0000	0211	32129	2569			14548	964	054		006	000			
154		OBS	0005	0209	32130	2569			14548	971	059		006	000			
		STD	0010	0084	3234	2594	0020691	0022	14496	933							
		STD	0010	0084	3234	2594	0020691	0022	14496	933							
154		OBS	0010	0084	32343	2594			14496	933	093		010	022			
154		OBS	0015	0077	32378	2598			14494	910	100		010	028			
		STD	0020	0077	3238	2598	0020339	0042	14495	907							
154		OBS	0020	0077	32384	2598			14495	907	099		011	029			
154		OBS	0025	0079	32390	2598			14497	906	106		009	025			
		STD	0030	0096	3239	2598	0020374	0063	14505								
154		OBS	0030	0096	32393	2598			14505	9100	102		012	027			

Reference		Ship Code	Latitude ° 1/10	Longitude ° '1/10	Drift Indctr	Marsden Square		Station Time (GMT)			Year	Originator's		Depth to Bottom	Max. Depth of S'mpl's	Wave Observations				Weather Code	Cloud Codes			NODC Station Number
Ctry Code	ID. No.					10°	1°	MO	DAY	HR.1/10		Cruise No.	Station Number			DIR	HGT	PER	SEA		Type	Amt		
311524		NW	6413 N	17050 W		234	40	06	18	172	1969	853	040	0037	2	09	0	2		X4	X	9		0040

Water		Wind		Barometer (mb)	Air Temp. °C		Vis. Code	No. Obs. Depths	Special Observations
Color Code	Trans. (m)	Dir.	Speed or Force		Dry Bulb	Wet Bulb			
		14	508	047	029	027	5	07	

Messenger Time HR 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁷	Σ Δ D Dyn. M × 10³	Sound Velocity	O₂ ml/l	PO₄-P µg-at/l	Total-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0258	3155	2519	0027826	0000	14561	962							
174		OBS	0000	0258	31551	2519			14561	962	049		005	005			
174		OBS	0005	0230	31602	2526			14550	938	052		006	005			
		STD	0010	-0029	3237	2602	0019997	0024	14445	870							
174		OBS	0010	-0029	32365	2602			14445	870	132		010	091			
174		OBS	0014	-0036	32404	2605			14443	870	154		003	103			
174		OBS	0019	-0040	32414	2606			14442	871	146		009	081			
		STD	0020	-0040	3242	2606	0019568	0044	14442	874							
174		OBS	0023	-0039	32418	2606			14443	878	140		012	082			
174		OBS	0028	-0036	32418	2606			14445	870	139		015	088			

Reference		Ship Code	Latitude ° 1/10	Longitude ° '1/10	Drift Indctr	Marsden Square		Station Time (GMT)			Year	Originator's		Depth to Bottom	Max. Depth of S'mpl's	Wave Observations				Weather Code	Cloud Codes			NODC Station Number
Ctry Code	ID. No.					10°	1°	MO	DAY	HR.1/10		Cruise No.	Station Number			DIR	HGT	PER	SEA		Type	Amt		
311524		NW	6417 N	171170W		234	41	06	18	193	1969	BS3	041	0038	2	08	1	2		X4	X	9		0041

Water		Wind		Barometer (mb)	Air Temp. °C		Vis. Code	No. Obs. Depths	Special Observations
Color Code	Trans. (m)	Dir.	Speed or Force		Dry Bulb	Wet Bulb			
		14	S10	053	042	039	6	07	

Messenger Time HR 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁷	Σ Δ D Dyn. M. × 10³	Sound Velocity	O₂ ml/l	PO₄-P µg-at/l	Total-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0062	3183	2555	0024462	0000	14477	844							
195		OBS	0000	0062	31834	2555			14477	844	118		047	104			
195		OBS	0005	-0091	32418	2608			14416	803	166		009	163			
		STD	0010	-0135	3253	2618	0018401	0021	14397	803							
195		OBS	0010	-0135	32529	2618			14397	803	188		013	152			
195		OBS	0015	-0139	32526	2618			14396	820	189		010	172			
		STD	0020	-0141	3254	2619	0018333	0040	14396	810							
195		OBS	0020	-0141	32535	2619			14396	810	192		007	191			
195		OBS	0025	-0139	32534	2619			14398	810	184		010	156			
		STD	0030	-0139	3255	2620	0018245	0058	14399	787							
195		OBS	0030	-0139	32546	2620			14399	787	180		012	157			

Reference		Ship Code	Latitude ° 1/10	Longitude ° '1/10	Drift Indctr	Marsden Square		Station Time (GMT)			Year	Originator's		Depth to Bottom	Max. Depth of S'mpl's	Wave Observations				Weather Code	Cloud Codes			NODC Station Number
Ctry Code	ID. No.					10°	1°	MO	DAY	HR 1/10		Cruise No.	Station Number			DIR	HGT	PER	SEA		Type	Amt		
311524		NW	64195N	171345W		234	41	06	18	223	1969	8S3	042	0050	2	10	0	2		X2	7	8		0042

Water		Wind		Barometer (mb)	Air Temp. °C		Vis Code	No. Obs. Depths	Special Observations
Color Code	Trans. (m)	Dir.	Speed or Force		Dry Bulb	Wet Bulb			
		14	508	065	034	030	8	09	

Messenger Time HR 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁷	Σ Δ D Dyn. M. × 10³	Sound Velocity	O₂ ml/l	PO₄-P µg-at/l	Total-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0026	3235	2598	0020319	0000	14468	830							
225		OBS	0000	0026	32354	2598			14468	830	154		040	161			
225		OBS	0005	0028	32335	2597			14470	842	165		007	153			
		STD	0010	-0054	3252	2615	0018739	0020	14435	807							
225		OBS	0010	-0054	32517	2615			14435	807	184		009	172			
225		OBS	0015	-0127	32686	2631			14404	883	208		005	214			
		STD	0020	-0135	3270	2633	0017057	0037	14401	770							
225		OBS	0020	-0135	32703	2633			14401	770	230		002	232			
225		OBS	0025	-0134	32708	2633			14403	776	212		009	202			
		STD	0030	-0134	3271	2633	0017006	0054	14404	776							
225		OBS	T0030	-0134	32709	2633			14404	776	199		006	224			
225		OBS	0035	-0135	32712	2633			14404	763	212		010	198			
225		OBS	0040	-0137	32718	2634			14404	779	216		010	210			

REFERENCE CTRY CODE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEA-THER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
311524	NW	6519 N	17013 W		234	50	06	19	057	1969	BS3	043	0042	2	12	0	2		X4	X	9		0043

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		07	S15	083	096	091	5	08	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ △ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0024	3289	2641	0016255	0000	14475	898							
058		OBS	0000	0024	32885	2641			14475	898	017		044	131			
058		OBS	0005	0018	32890	2642			14473	899	019		013	138			
		STD	0010	-0033	3289	2644	0016002	0016	14450	892							
058		OBS	0010	-0033	32885	2644			14450	892			021	140			
058		OBS	0015	-0084	32942	2650			14428	826	022		011	208			
		STD	0020	-0094	3294	2651	0015326	0032	14424	817							
058		OBS	0020	-0094	32944	2651			14424	817	025		012	172			
058		OBS	0025	-0094	32965	2652			14425	797	021		020	161			
058		OBS	0029	-0095	32956	2652			14425	792	024		010	194			
		STD	0030	-0095	3296	2652	0015194	0047	14426	791							
058		OBS	0034	-0096	32965	2653			14426	788	024		017	191			

REFERENCE CTRY CODE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEA-THER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
311524	NW	6515 N	16948 W		233	59	06	19	077	1969	BS3	044	0044	2	13	0	2		X2	6	8		0044

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		06	S17	078	044	040	7	09	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ △ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0141	3271	2621	0018199	0000	14525	919							
078		OBS	0000	0141	32714	2621			14525	919	122		026	073			
078		OBS	0005	0050	32737	2628			14485	910	182		013	105			
		STD	0010	-0072	3279	2637	0016623	0017	14430	863							
078		OBS	0010	-0072	32785	2637			14430	863	219		013	176			
078		OBS	0015	-0111	32805	2640			14413	802	248		010	210			
		STD	0020	-0114	3281	2640	0016308	0034	14413	788							
078		OBS	0020	-0114	32808	2640			14413	788	215		016				
078		OBS	0025	-0116	32822	2642			14413	790	212		012	219			
		STD	0030	-0119	3282	2641	0016211	0050	14412	791							
078		OBS	0030	-0119	32818	2641			14412	791	262		012	212			
078		OBS	0035	-0119	32817	2641			14413	793	261		011	204			
078		OBS	0040	-0123	32823	2642			14412	781	251		013	199			

REFERENCE CTRY CODE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEA-THER CODE	CLOUD CODES TYPE	CLOUD CODES AMT		NODC STATION NUMBER
311524	NW	65105N	16921 W		233	59	06	19	092	1969	BS3	045	0052	2	00	0	X		X8	6	8		0045

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		09	S15	078	043	041	7	10	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ △ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0171	3234	2589	0021248	0000	14533	1012							
094		OBS	0000	0171	32338	2589			14533	1012	079		013	026			
094		OBS	0005	0112	32364	2594			14508	1008	082		008	058			
		STD	0010	0039	3248	2608	0019416	0020	14477	990							
094		OBS	0010	0039	32480	2608			14477	990	083		009				
094		OBS	0015	0008	32614	2620			14466	937	142		016	091			
		STD	0020	-0029	3264	2624	0017904	0039	14450	915							
094		OBS	0020	-0029	32638	2624			14450	915	152		010	106			
094		OBS	0025	-0047	32662	2626			14443	852	170		016	122			
		STD	0030	-0131	3271	2633	0017030	0056	14405	804							
094		OBS	0030	-0131	32707	2633			14405	804	201		017	183			
094		OBS	0035	-0144	32720	2634			14400	788	199		024	183			
094		OBS	T0040	-0143	32776	2639			14402	770	237		015	232			
094		OBS	0045	-0144	32773	2638			14402	777	264		010	206			

Reference Ctry Code	Reference ID. No.	Ship Code	Latitude ° 1/10	Longitude ° '1/10	Drift Indctr	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) Mo	Day	Hr. 1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir.	Hgt	Per	Sea	Weather Code	Cloud Codes Type	Amt		NODC Station Number
31	1524	NW	65068N	169015W		233	59	06	19	112	1969	BS3	046	0056	2	00	0	X		X2	6	8		0046

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mbs)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		07	S15	070	047	044	7	11	

Messenger Time Hr 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁷	ΣΔD Dyn. M. ×10³	Sound Velocity	O₂ ml/l	PO₄-P µg-at/l	Total-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0264	3226	2575	0022536	0000	14573	1081							
114		OBS	0000	0264	32255	2575			14573	1081	047		009	003			
114		OBS	0005	0198	32281	2582			14545	11340	059		008	003			
		STD	0010	0126	3230	2588	0021265	0022	14514	1076							
114		OBS	0010	0126	32299	2588			14514	1076	063		010	005			
114		OBS	0015	0084	32291	2590			14496	982	085		011	016			
		STD	0020	-0116	3259	2623	0017991	0042	14409	859							
114		OBS	0020	-0116	32588	2623			14409	859	156		017	122			
114		OBS	0024	-0115	32598	2623			14410	836	171		017	131			
114		OBS	0029	-0110	32614	2625			14413	827	169		015	115			
		STD	0030	-0110	3262	2625	0017756	0059	14414	822							
114		OBS	0034	-0110	32642	2627			14415	809	164		014	099			
114		OBS	T0039	-0109	32660	2628			14416	807	194		017	112			
114		OBS	0044	-0110	32656	2628			14417	802	192		018	099			
114		OBS	0049	-0110	32655	2628			14417	802	192		018	136			

Reference Ctry Code	Reference ID. No.	Ship Code	Latitude ° 1/10	Longitude ° '1/10	Drift Indctr	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) Mo	Day	Hr. 1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir.	Hgt	Per	Sea	Weather Code	Cloud Codes Type	Amt		NODC Station Number
31	1524	NW	65024N	16837 W		233	58	06	19	130	1969	BS3	047	0049	2	00	0	X		X2	6	8		0047

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mbs)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		08	S14	061	050	046	7	10	

Messenger Time Hr 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁷	ΣΔD Dyn. M. ×10³	Sound Velocity	O₂ ml/l	PO₄-P µg-at/l	Total-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0220	3240	2590	0021104	0000	14556	976							
132		OBS	0000	0220	32401	2590			14556	976	067		005	010			
132		OBS	0005	0154	32434	2597			14528	986	050		004	006			
		STD	0010	0103	3243	2600	0020111	0021	14506	963							
132		OBS	0010	0103	32433	2600			14506	963	058		006	008			
132		OBS	0015	0083	32425	2601			14498	956	070		005	012			
		STD	0020	0069	3241	2601	0020068	0041	14492	956							
132		OBS	0020	0069	32414	2601			14492	956	081		010	008			
132		OBS	0025	0065	32411	2601			14491	951	086		010	009			
		STD	0030	0062	3242	2601	0020014	0061	14490	947							
132		OBS	T0030	0062	32416	2601			14490	947	082		007	010			
132		OBS	0035	0059	32416	2602			14490	943	090		008	011			
132		OBS	0040	0054	32429	2603			14489	943	082		008	013			
132		OBS	0045	0054	32425	2603			14489	934	086		005	012			

Reference Ctry Code	Reference ID. No.	Ship Code	Latitude ° 1/10	Longitude ° '1/10	Drift Indctr	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) Mo	Day	Hr. 1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir.	Hgt	Per	Sea	Weather Code	Cloud Codes Type	Amt		NODC Station Number
31	1524	NW	64585N	16814 W		233	48	06	19	145	1969	BS3	048	0043	2	10	0	2		X6	5	8		0048

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mbs)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		13	S07	058	087	071	7	08	

Messenger Time Hr 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁷	ΣΔD Dyn. M. ×10³	Sound Velocity	O₂ ml/l	PO₄-P µg-at/l	Total-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0403	3142	2497	0029999	0000	14622	816							
146		OBS	0000	0403	31422	2497			14622	816	044		018	001			
146		OBS	0005	0386	31930	2538			14622	834	071		008				
		STD	0010	0271	3206	2559	0024069	0027	14575	855							
146		OBS	0010	0271	32060	2559			14575	855	045		009	001			
146		OBS	0015	0185	32179	2575			14540	868	075		011	001			
		STD	0020	0141	3228	2586	0021507	0050	14522	891							
146		OBS	0020	0141	32279	2586			14522	891	101		006	001			
146		OBS	0025	0130	32305	2589			14519	898	113		010	002			
		STD	0030	0129	3232	2590	0021152	0071	14519	900							
146		OBS	0030	0129	32316	2590			14519	900			011	000			
146		OBS	0035	0127	32310	2589			14519	902	106		006	001			

Reference Ctry code	Reference ID no.	Ship code	Latitude ° 1/10	Longitude ° 1/10	Drift indctr	Marsden square 10°	Marsden square 1°	Station time (GMT) Mo	Day	Hr. 1/10	Year	Originator's cruise no.	Originator's station number	Depth to bottom	Max. depth of s'mpl's	Wave observations Dir.	Hgt	Per	Sea	Weather code	Cloud codes Type	Cloud codes Amt		NODC station number
31	1524	NW	64592N	16751 W		233	47	06	19	160	1969	BS3	049	0044	2	11	0	2		X6	7	8		0049

Water color code	Water trans. (m)	Wind dir.	Wind speed or force	Barometer (mbs)	Air temp. °C dry bulb	Air temp. °C wet bulb	Vis. code	No. obs. depths	Special observations
		09	S05	055	094	077	7	08	

Messengr time or HR 1/10	Cast no.	Card type	Depth (m)	T °C	S ‰	Sigma-T	Specific volume anomaly×10^7	ΣΔD dyn. m. x 10^3	Sound velocity	O_2 ml/l	PO_4-P μg-at/l	Total-P μg-at/l	NO_2-N μg-at/l	NO_3-N μg-at/l	SiO_4-Si μg-at/l	pH	SCC
		STD	0000	0400	3198	2541	0025731	0000	14628	816							
162		OBS	0000	0400	31984	2541			14628	816	047		010	001			
162		OBS	0005	0380	31990	2544			14620	822	066		007	001			
		STD	0010	0300	3200	2552	0024752	0025	14587	821							
162		OBS	0010	0300	32000	2552			14587	821	060		010	000			
162		OBS	0015	0262	31991	2554			14571	823	089		009	000			
		STD	0020	0258	3198	2554	0024556	0050	14570	827							
162		OBS	0020	0258	31983	2554			14570	827	091		008	000			
162		OBS	0025	0260	31988	2554			14572	829	065		009	000			
		STD	0030	0258	3198	2553	0024611	0074	14572	830							
162		OBS	0030	0258	31976	2553			14572	830	076		007	000			
162		OBS	0035	0257	31980	2554			14572	833	063		013	000			

Reference Ctry code	Reference ID no.	Ship code	Latitude ° 1/10	Longitude ° 1/10	Drift indctr	Marsden square 10°	Marsden square 1°	Station time (GMT) Mo	Day	Hr. 1/10	Year	Originator's cruise no.	Originator's station number	Depth to bottom	Max. depth of s'mpl's	Wave observations Dir.	Hgt	Per	Sea	Weather code	Cloud codes Type	Cloud codes Amt		NODC station number
31	1524	NW	6459 N	16743 W		233	47	06	19	167	1969	BS3	050	0036	2	11	0	2		X6	7	8		0050

Water color code	Water trans. (m)	Wind dir.	Wind speed or force	Barometer (mbs)	Air temp. °C dry bulb	Air temp. °C wet bulb	Vis. code	No. obs. depths	Special observations
		09	S07	060	104	092	7	08	

Messengr time or HR 1/10	Cast no.	Card type	Depth (m)	T °C	S ‰	Sigma-T	Specific volume anomaly×10^7	ΣΔD dyn. m. x 10^3	Sound velocity	O_2 ml/l	PO_4-P μg-at/l	Total-P μg-at/l	NO_2-N μg-at/l	NO_3-N μg-at/l	SiO_4-Si μg-at/l	pH	SCC
		STD	0000	0521	3158	2497	0029945	0000	14673	773							
169		OBS	0000	0521	31583	2497			14673	773	063		011	001			
169		OBS	0005	0249	31923	2550			14563	817	075		010	001			
		STD	0010	0240	3192	2550	0024890	0027	14560	814							
169		OBS	0010	0240	31921	2550			14560	814	085		005	000			
169		OBS	0014	0239	31915	2550			14560	809	095		005	000			
169		OBS	0019	0236	31916	2550			14559	813	072		003	000			
		STD	0020	0236	3192	2550	0024895	0052	14560	815							
169		OBS	0024	0237	31920	2550			14561	821	070		004	000			
169		OBS	0029	0234	31919	2551			14560	809Q	072		001	001			
		STD	0030	0234	3192	2551	0024859	0077	14561	826							
169		OBS	0034	0235	31921	2551			14562	827	086		001	001			

Reference Ctry code	Reference ID no.	Ship code	Latitude ° 1/10	Longitude ° 1/10	Drift indctr	Marsden square 10°	Marsden square 1°	Station time (GMT) Mo	Day	Hr. 1/10	Year	Originator's cruise no.	Originator's station number	Depth to bottom	Max. depth of s'mpl's	Wave observations Dir.	Hgt	Per	Sea	Weather code	Cloud codes Type	Cloud codes Amt		NODC station number
31	1524	NW	6500 N	16735 W		233	57	06	19	189	1969	BS3	051	0027	2	00	0	X		X2	6	8		0051

Water color code	Water trans. (m)	Wind dir.	Wind speed or force	Barometer (mbs)	Air temp. °C dry bulb	Air temp. °C wet bulb	Vis. code	No. obs. depths	Special observations
		13	S08	053	109	099	7	04	

Messengr time or HR 1/10	Cast no.	Card type	Depth (m)	T °C	S ‰	Sigma-T	Specific volume anomaly×10^7	ΣΔD dyn. m. x 10^3	Sound velocity	O_2 ml/l	PO_4-P μg-at/l	Total-P μg-at/l	NO_2-N μg-at/l	NO_3-N μg-at/l	SiO_4-Si μg-at/l	pH	SCC
		STD	0000	0544	3143	2482	0031354	0000	14681	766							
190		OBS	0000	0544	31428	2482			14681	766	066		006	002			
190		OBS	0005	0536	31453	2485			14679	778	067		002	003			
		STD	0010	0228	3189	2549	0025016	0028	14554	804							
190		OBS	0010	0228	31893	2549			14554	804	080		006	003			
190		OBS	0015	0225	31898	2550			14554	807			005	004			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	DAY	HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	AMT		NODC STATION NUMBER
31	1524	NW	65003N	16722 W		233	57	06	19	227	1969	BS3	052	0020	2	11	0	2		X2	6	7		0052

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		15	S16	058	079	074	8	04	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁵	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0568	3122	2463	0033207	0000	14688	737							
228		OBS	0000	0568	31216	2463			14688	737	065		005	002			
228		OBS	0005	0557	31230	2465			14684	738	068		003	001			
		STD	0010	0548	3125	2468	0032758	0033	14682	743							
228		OBS	0010	0548	31248	2468			14682	743	069		006	002			
228		OBS	0014	0543	31260	2469			14680	746	069		004				

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	DAY	HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	AMT		NODC STATION NUMBER
31	1524	NW	65008N	16715 W		233	57	06	19	235	1969	8S3	053	0018	2	13	0	2		X2	6	7		0053

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		16	S18	061	081	075	8	03	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁵	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0564	3122	2464	0033141	0000	14686	702							
237		OBS	0000	0564	31219	2464			14686	702	080		008	002			
237		OBS	0005	0565	31223	2464			14687	721	078		009	002			
		STD	0010	0564	3123	2464	0033104	0033	14688	703							
237		OBS	0010	0564	31225	2464			14688	703	076		008	002			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	DAY	HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR.	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	AMT		NODC STATION NUMBER
31	1524	NW	65352N	168140W		233	58	06	20	047	1969	BS3	054	0044	2	12	0	2		X2	7	8		0054

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		15	S15	069	071	069	7	08	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁵	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0449	3161	2507	0029029	0000	14644	772							
048		OBS	0000	0449	31608	2507			14644	772	074		002	001			
048		OBS	0005	0446	31606	2507			14643	764	063		005	001			
		STD	0010	0445	3161	2507	0028974	0029	14644	763							
048		OBS	0010	0445	31611	2507			14644	763	061		004	004			
048		OBS	0015	0444	31612	2508			14644	762	059		002				
		STD	0020	0439	3162	2508	0028892	0058	14643	763							
048		OBS	0020	0439	31615	2508			14643	763	052		003	003			
048		OBS	0025	0440	31621	2509			14644	754	066		000	004			
048		OBS	0029	0437	31620	2509			14644	757	078		003	002			
		STD	0030	0437	3162	2509	0028843	0087	14644	759							
048		OBS	0034	0438	31621	2509			14645	770	056		000	003			

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR 1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	65362N	168198W		233	58	06	20	057	1969	BS3	055	0056	2	00	0	X		X1	6	6		0055

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		18	S07	069	108	098	7	09	

MESSENGER TIME OR T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0390	3178	2526	0027187	0000	14621	776							
058		OBS	0000	0390	31779	2526			14621	776	060		005	004			
058		OBS	0005	0314	31909	2543			14591	8030	070		006	001			
		STD	0010	0281	3195	2549	0024980	0026	14578	796							
058		OBS	0010	0281	31950	2549			14578	796	065		009	001			
058		OBS	0015	0275	31958	2550			14576	781	078		004	001			
		STD	0020	0270	3196	2551	0024821	0051	14575	779							
058		OBS	0020	0270	31960	2551			14575	779	072		010	001			
058		OBS	0025	0270	31962	2551			14576	778	072		005	000			
		STD	0030	0270	3196	2551	0024862	0076	14577	754							
058		OBS	T0030	0270	31955	2551			14577	754	080		014	000			
058		OBS	0035	0269	31967	2552			14577	750	084		010	001			
058		OBS	0040	0268	31961	2551			14578	772	084		010	002			

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR 1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	6536 N	16826 W		233	58	06	20	067	1969	BS3	056	0056	2	19	1	2		X4	X	9		0056

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		17	S08	073	099	084	6	10	

MESSENGER TIME OR T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0412	3169	2517	0028067	0000	14629	792							
068		OBS	0000	0412	31689	2517			14629	792	057		005	001			
068		OBS	0005	0376	31744	2525			14615	787	064		003	001			
		STD	0010	0299	3197	2549	0025001	0027	14586	781							
068		OBS	0010	0299	31966	2549			14586	781	073		009	001			
068		OBS	0015	0252	32071	2561			14568	781	075		004	002			
		STD	0020	0249	3207	2562	0023821	0051	14567	783							
068		OBS	0020	0249	32071	2562			14567	783	075		008	000			
068		OBS	0025	0250	32081	2562			14569	781	075		007	000			
		STD	0030	0250	3208	2562	0023801	0075	14570	788							
068		OBS	T0030	0250	32075	2562			14570	7920			005	001			
068		OBS	0035	0250	32070	2561			14570	790	074		006	000			
068		OBS	0040	0249	32065	2561			14571	788	081		002	000			
068		OBS	0045	0250	32070	2561			14572	786	075		002	000			

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEATHER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR 1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	6536 N	16834 W		233	58	06	20	077	1969	BS3	057	0056	2	19	1	2		X4	X	9		0057

WATER		WIND		BAROMETER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		17	S08	078	072	069	6	10	

MESSENGER TIME OR T HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0349	3220	2563	0023637	0000	14609	809							
079		OBS	0000	0349	32201	2563			14609	809	057		002	000			
079		OBS	0005	0292	32199	2568			14585	814	065		006	001			
		STD	0010	0226	3218	2572	0022848	0023	14557	798							
079		OBS	0010	0226	32177	2572			14557	798	082		003	001			
079		OBS	0015	0200	32173	2573			14546	794	086		005	001			
		STD	0020	0178	3217	2574	0022586	0046	14537	794							
079		OBS	0020		32168					794	070		005	001			
079		OBS	0025		32196					794	069		004	000			
		STD	0030	0148	3218	2578	0022272	0068	14526	794							
079		OBS	0030	0148	32184	2578			14526	794	076		004	003			
079		OBS	0035	0141	32171	2577			14523	792	079		004	004			
079		OBS	0040	0139	32171	2577			14523	786	077		005	004			
079		OBS	0045	0142	32176	2577			14526	785	087		004	003			

Reference Ctry Code	Reference ID No.	Ship Code	Latitude ° 1/10	Longitude ° 1/10	Drift Knots	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) Mo	Station Time (GMT) Day	Station Time (GMT) Hr 1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir	Wave Observations Hgt	Wave Observations Per	Wave Observations Sea	Weather Code	Cloud Codes Type	Cloud Codes Amt		NODC Station Number
31	1524	NW	65342N	168434W		233	58	06	20	092	1969	BS3	058	0055	2	00	0	X		X4	X	9		0058

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mb)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		19	S10	083	043	042	0	10	

Messenger Time Hr 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁷	ΣΔD Dyn. M. × 10³	Sound Velocity	O_2 ml/l	PO_4–P µg-at/l	Total–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0301	3234	2579	0022154	0000	14590	904							
092		OBS	0000	0301	32344	2579			14590	904	044		000	001			
092		OBS	0005	0295	32343	2579			14589	896	048		000	000			
		STD	0010	0121	3235	2592	0020885	0022	14513	897							
092		OBS	0010	0121	32345	2592			14513	897	065		003	001			
092		OBS	0015	0086	32382	2597			14498	858	086		004	001			
		STD	0020	0083	3240	2599	0020257	0042	14498	842							
092		OBS	0020	0083	32399	2599			14498	842	094		005	001			
092		OBS	0025	0084	32404	2599			14499	841	092		004	000			
		STD	0030	0085	3241	2599	0020211	0062	14500	840							
092		OBS	0030		32406					840			002	001			
092		OBS	0035	0085	32407	2599			14501	838	094		004	001			
092		OBS	0040	0084	32410	2600			14502	836	100		007	000			
092		OBS	0045	0085	32408	2600			14503	831	095		002	001			

Reference Ctry Code	Reference ID No.	Ship Code	Latitude ° 1/10	Longitude ° 1/10	Drift Knots	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) Mo	Station Time (GMT) Day	Station Time (GMT) Hr 1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir	Wave Observations Hgt	Wave Observations Per	Wave Observations Sea	Weather Code	Cloud Codes Type	Cloud Codes Amt		NODC Station Number
31	1524	NW	65361N	16856 W		233	58	06	20	104	1969	BS3	059	0053	2	00	0	X		X4	6	8		0059

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mb)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		21	S10	084	036	035	3	10	

Messenger Time Hr 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁷	ΣΔD Dyn. M. × 10³	Sound Velocity	O_2 ml/l	PO_4–P µg-at/l	Total–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0265	3234	2582	0021869	0000	14575	952							
106		OBS	0000	0265	32344	2582			14575	952	040		000	000			
106		OBS	0005	0265	32340	2582			14576	957	038		000	000			
		STD	0010	0157	3235	2590	0021075	0021	14529	991							
106		OBS	0010	0157	32349	2590			14529	991	038		001	000			
106		OBS	0015	0123	32387	2596			14515		042		003	000			
		STD	0020	-0058	3258	2620	0018214	0041	14436	810							
106		OBS	0020	-0058	32583	2620			14436	810	135		003	059			
106		OBS	0025	-0066	32592	2621			14433	794	138		011	068			
		STD	0030	-0068	3259	2622	0018097	0059	14433	786							
106		OBS	0030	-0068	32593	2622			14433	786	131		009	084			
106		OBS	0035	-0069	32592	2621			14433	785	151		012	092			
106		OBS	0040	-0072	32592	2622			14433	778			013	084			
106		OBS	0045	-0071	32596	2622			14434	776	136		013	066			

Reference Ctry Code	Reference ID No.	Ship Code	Latitude ° 1/10	Longitude ° 1/10	Drift Knots	Marsden Square 10°	Marsden Square 1°	Station Time (GMT) Mo	Station Time (GMT) Day	Station Time (GMT) Hr 1/10	Year	Originator's Cruise No.	Originator's Station Number	Depth to Bottom	Max. Depth of S'mpl's	Wave Observations Dir	Wave Observations Hgt	Wave Observations Per	Wave Observations Sea	Weather Code	Cloud Codes Type	Cloud Codes Amt		NODC Station Number
31	1524	NW	65275N	169076W		233	59	06	20	129	1969	BS3	060	0056	2	00	0	X		X4	X	9		0060

Water Color Code	Water Trans. (m)	Wind Dir.	Wind Speed or Force	Barometer (mb)	Air Temp. °C Dry Bulb	Air Temp. °C Wet Bulb	Vis. Code	No. Obs. Depths	Special Observations
		19	S12	087	045	045	0	11	

Messenger Time Hr 1/10	Cast No.	Card Type	Depth (m)	T °C	S ‰	Sigma-T	Specific Volume Anomaly ×10⁷	ΣΔD Dyn. M. × 10³	Sound Velocity	O_2 ml/l	PO_4–P µg-at/l	Total–P µg-at/l	NO_2–N µg-at/l	NO_3–N µg-at/l	SiO_4–Si µg-at/l	pH	SCC
		STD	0000	0276	3217	2567	0023257	0000	14577	1085							
131		OBS	0000	0276	32172	2567			14577	1085	043		005	002			
131		OBS	0005	0219	32278	2580			14555		046		005	011			
		STD	0010	0054	3235	2597	0020451	0022	14483	999							
131		OBS	0010	0054	32354	2597			14483	11750	104		006	020			
131		OBS	0015	0033	32387	2601			14474	946			004	040			
		STD	0020	-0040	3247	2611	0019131	0042	14443	887							
131		OBS	0020	-0040	32472	2611			14443	887	117		008	080			
131		OBS	0025	-0115	32612	2625			14410	838	156		014	111			
		STD	0030	-0112	3266	2628	0017435	0060	14413	800							
131		OBS	T0030	-0112	32661	2628			14413	800	147		011	095			
131		OBS	0035	-0112	32670	2629			14414	799	188		013	150			
131		OBS	0040	-0113	32666	2629			14415		182		011	104			
131		OBS	0045	-0111	32672	2629			14416	800	188		016	138			
		STD	0050	-0111	3267	2629	0017386	0095	14417	799							
131		OBS	0050	-0111	32666	2629			14417	799	158		012	078			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	1524	NW	65286N	169170W		233	59	06	20	138	1969	8S3	061	0051	2	12	0	2		X4	X	9	0061

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		34	S02	089	032	032	2	09	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁵	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0213	3252	2600	0020144	0000	14554	1071							
140		OBS	0000	0213	32521	2600			14554	1071	065		006				
140		OBS	0005	0096	32536	2609			14503	1063	088		005	016			
		STD	0010	-0095	3264	2626	0017660	0019	14418	845							
140		OBS	0010	-0095	32640	2626			14418	845	183		013	159			
140		OBS	0014	-0115	32640	2627			14409	821	193		015	157			
140		OBS	0019	-0128	32632	2627			14404	812	200		017	156			
		STD	0020	-0129	3264	2627	0017556	0037	14403	809							
140		OBS	0024	-0130	32648	2628			14404	799	205		016	163			
140		OBS	T0029	-0130	32647	2628			14405	795	208		016	180			
		STD	0030	-0130	3265	2628	0017493	0054	14405	796							
140		OBS	0034	-0131	32647	2628			14405	798	204		012	164			
140		OBS	0039	-0134	32640	2627			14404	794	206		015	165			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	1524	NW	65305N	16928 W		233	59	06	20	147	1969	8S3	062	0051	2	12	0	2		X4	X	9	0062

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		19	S05	090	032	032	2	10	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁵	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0046	3276	2630	0017308	0000	14483	945							
148		OBS	0000	0046	32761	2630			14483	945	127		016	068			
148		OBS	0005	0073	32757	2628			14496	961	125		017	057			
		STD	0010	-0105	3279	2639	0016479	0017	14415	924							
148		OBS	0010	-0105	32790	2639			14415	924	176		017	156			
148		OBS	0015	-0112	32798	2640			14413	790	199		013	164			
		STD	0020	-0119	3280	2640	0016386	0033	14410	795							
148		OBS	0020	-0119	32796	2640			14410	795	200		013	165			
148		OBS	0025	-0116	32800	2640			14413	795	198		014	164			
		STD	0030	-0116	3280	2640	0016388	0050	14413	794							
148		OBS	0030	-0116	32796	2640			14413	794	198		016	170			
148		OBS	0035	-0118	32797	2640			14413	792	200		013	170			
148		OBS	T0040	-0119	32795	2640			14414	794	200		014	170			
148		OBS	0045	-0118	32799	2640			14415		199		015	170			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR.1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	1524	NW	65368N	16938 W		233	59	06	20	158	1969	8S3	063	0053	2	12	0	2		X4	X	9	0063

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BARO-METER (mbs)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		07	S04	090	028	026	2	10	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁵	Σ Δ D DYN. M. x 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0077	3283	2634	0016928	0000	14498								
159		OBS	0000	0077	32832	2634			14498		150		018	072			
159		OBS	0005	-0016	32874	2642			14457	873	165		017	124			
		STD	0010	-0079	3286	2643	0016048	0016	14428	817							
159		OBS	0010	-0079	32857	2643			14428	817	202		012	165			
159		OBS	0015	-0084						810	200		013	126			
		STD	0020	-0090	3285	2643	0016029	0033	14425	806							
159		OBS	0020	-0090	32854	2643			14425	806	260		017	122			
159		OBS	0025	-0088	32856	2643			14427	811	206		014	138			
159		OBS	0029	-0091	32844	2643			14426	813	199		015	162			
		STD	0030	-0091	3284	2643	0016097	0049	14426	813							
159		OBS	0034	-0090	32843	2642			14427	812	205		014	171			
159		OBS	0039	-0091	32846	2643			14427	817	210		013	169			
159		OBS	0044	-0091	32851	2643			14428	803	190		012	164			

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR. 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	1524	NW	65385N	169431W		233	59	06	20	166	1969	BS3	064	0051	2	12	0	2		X4	X	9	0064

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		12	505	089	017	017	2	09	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY	Σ Δ D DYN. M × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH
		STD	0000	0060	3288	2639	0016442	0000	14491	913						
168		OBS	0000	0060	32884	2639			14491	913	105		015	101		
168		OBS	0005	0045	32888	2640			14485	922	142		017	112		
		STD	0010	0018	3289	2642	0016155	0016	14474	907						
168		OBS	0010	0018	32894	2642			14474	907	197		018	119		
168		OBS	0015	-0039	32909	2646			14448	862	168		017	094		
		STD	0020	-0047	3291	2646	0015775	0032	14445	851						
168		OBS	0020	-0047	32907	2646			14445	851	178		014	144		
168		OBS	0025	-0050	32916	2647			14445	851	125		011	096		
		STD	0030	-0051	3292	2647	0015648	0048	14445	855						
168		OBS	T0030	-0051	32921	2647			14445	855	130		013	146		
168		OBS	0035	-0055	32917	2647			14444	851	140		015	140		
168		OBS	0040	-0056	32914	2647			14445	856	190		017	125		

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR. 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	1524	NW	65445N	16949 W		233	59	06	20	186	1969	BS3	065	0051	2	00	0	4		X4	X	9	0065

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		34	506	092	017	015	5	10	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY	Σ Δ D DYN. M × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH
		STD	0000	-0006	3293	2646	0015752	0000	14461	882						
188		OBS	0000	-0006	32933	2646			14461	882	140		014	123		
188		OBS	0005	00490	32941	26440				923	138		017	099		
		STD	0010	-0050	3295	2649	0015477	0016	14443	839						
188		OBS	0010	-0050	32945	2649			14443	839	178		015	141		
188		OBS	0015	-0069	32937	2649			14435	814	188		014	161		
		STD	0020	-0074	3295	2650	0015385	0031	14433	812						
188		OBS	0020	-0074	32945	2650			14433	812	172		014	166		
188		OBS	0025	-0073	32934	2649			14435	818	178		018	162		
		STD	0030	-0076	3294	2650	0015419	0046	14434	814						
188		OBS	0030	-0076	32939	2650			14434	814	178		015	158		
188		OBS	0035	-0075	32943	2650			14435	827	185		017	166		
188		OBS	0040	-0078	32944	2650			14435	830	194		011	169		
188		OBS	0045	-0076	32965	2652			14437	821	194		015	172		

REFERENCE CTRY CODE	REFERENCE ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	STATION TIME (GMT) DAY	STATION TIME (GMT) HR. 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	WAVE OBSERVATIONS HGT	WAVE OBSERVATIONS PER	WAVE OBSERVATIONS SEA	WEATHER CODE	CLOUD CODES TYPE	CLOUD CODES AMT	NODC STATION NUMBER
31	1524	NW	6631 N	16936 W		233	69	06	21	061	1969	BS3	066	0056	2	00	0	X		X2	8	8	0066

WATER COLOR CODE	WATER TRANS. (m)	WIND DIR.	WIND SPEED OR FORCE	BAROMETER (mbs)	AIR TEMP °C DRY BULB	AIR TEMP °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		04	505	080	035	029	7	10	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY	Σ Δ D DYN. M × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH
		STD	0000	-0025	3294	2648	0015610	0000	14453	925						
063		OBS	0000	-0025	32941	2648			14453	925	156		020	099		
063		OBS	0005	-0030	32953	2649			14452	909	164		013	113		
		STD	0010	-0030	3296	2650	0015425	0016	14452	902						
063		OBS	0010	-0030	32962	2650			14452	902	166		022	113		
063		OBS	0015	-0030	32960	2650			14453	902	160		019	118		
		STD	0020	-0034	3296	2650	0015436	0031	14452	900						
063		OBS	0020	-0034	32958	2650			14452	900	136		013	109		
063		OBS	0025		32942					926						
		STD	0030	-0031	3296	2650	0015444	0046	14455	920						
063		OBS	0030	-0031	32958	2650			14455	920	168		018	115		
063		OBS	0035	-0032	32960	2650			14456	911			018	121		
063		OBS	0040	-0033	32940	26480				916	163		018	120		
063		OBS	0045	-0030	32969	2650			14458	905	151		018	106		

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA-THER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	6633 N	16912 W		233	69	06	21	092	1969	BS3	067	0055	2	00	0	X		X6	7	8		0067

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		31	S06	077	053	042	7	10	

MESSENGER TIME OR HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0131	3243	2598	0020313	0000	14517	884							
094		OBS	0000	0131	32428	2598			14517	884	084		009	009			
094		OBS	0005	0122	32444	2600			14514	891	084		012	011			
		STD	0010	0118	3244	2600	0020182	0020	14513	888							
094		OBS	0010	0118	32435	2600			14513	888	121		015	012			
094		OBS	0015	0096	32456	2603			14504	886	094		010	015			
		STD	0020	0094	3248	2605	0019701	0040	14504	890							
094		OBS	0020	0094	32480	2605			14504	890	094		013	022			
094		OBS	0025	0078	32489	2606			14498	888	188		035	030			
		STD	0030	0080	3250	2607	0019470	0060	14500	888							
094		OBS	0030	0080	32500	2607			14500	888	106		013	040			
094		OBS	0035	0072	32508	2608			14497	888	101		013	030			
094		OBS	0040	0068	32512	2609			14496	886	112		012	038			
094		OBS	0045	0070	32515	2609			14498	886	120		012	035			

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA-THER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	66350N	16848 W		233	68	06	21	106	1969	BS3	068	0045	2	00	0	X		X2	6	8		0068

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		34	S05	074	050	045	7	09	

MESSENGER TIME OR HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0226	3222	2575	0022505	0000	14556	839							
108		OBS	0000	0226	32222	2575			14556	839	087		009	005			
108		OBS	0005	0200	32261	2580			14546	882	093		009	004			
		STD	0010	0199	3226	2580	0022013	0022	14546	832							
108		OBS	0010	0199	32262	2580			14546	832	094		009	006			
108		OBS	0015	0199	32275	2582			14547	832	092		006	016			
		STD	0020	0197	3226	2580	0022016	0044	14547	821							
108		OBS	0020	0197	32260	2580			14547	821	090		006	005			
108		OBS	0025	0197	32275	2582			14548	823	097		009	005			
		STD	0030	0198	3227	2581	0021978	0066	14549	822							
108		OBS	0030	0198	32266	2581			14549	822	084		007	004			
108		OBS	0035	0196	32268	2581			14549	823	100		006	006			
108		OBS	0040	0196	32276	2582			14550	822	088		008	011			

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDCTR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA-THER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	1524	NW	66360N	168200W		233	68	06	21	122	1969	BS3	069	0036	2	00	0	X		X5	5	8		0069

WATER		WIND		BARO-METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		01	S07	074	039	038	5	07	

MESSENGER TIME OR HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁷	Σ Δ D DYN. M. × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0350	3204	2551	0024840	0000	14607	832							
124		OBS	0000	0350	32043	2551			14607	832	080		003	003			
124		OBS	0005	0339	32072	2554			14604	820	078		003	001			
		STD	0010	0254	3209	2563	0023713	0024	14568	809							
124		OBS	0010	0254	32090	2563			14568	809	082		002	003			
124		OBS	0015	0247	32102	2564			14566	805	082		003	001			
		STD	0020	0240	3213	2567	0023292	0048	14564	808							
124		OBS	0020	0240	32132	2567			14564	808	084		003	001			
124		OBS	0025	0224	32166	2571			14559	812	088		005	003			
		STD	0030	0215	3222	2576	0022477	0071	14556	812							
124		OBS	0030	0215	32216	2576			14556	812	083		007	002			

REFERENCE CTRY CODE	REFERENCE ID NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT IND'CTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	DAY	HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	AMT		NODC STATION NUMBER
311524		NW	66352N	167545W		233	67	06	21	133	1969	BS3	070	0027	2	00	0	X		X4	7	8		0070

WATER COLOR CODE	WATER TRANS (m)	WIND DIR	WIND SPEED OR FORCE	BAROMETER (mb)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		36	S06	075	081	066	6	05	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁸	Σ Δ D DYN. M × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0523	3176	2511	0028606	0000	14677	782							
135		OBS	0000	0523	31764	2511			14677	782	072		001	001			
135		OBS	0005	0497	31991	2532			14670	791	078		003	001			
		STD	0010	0276	3210	2561	0023835	0026	14578	800							
135		OBS	0010	0276	32096	2561			14578	800	086		005	001			
135		OBS	0015	0273	32092	2561			14577	806	083		004	001			
		STD	0020	0268	3210	2563	0023723	0050	14576	807							
135		OBS	0020	0268	32103	2563			14576	807	084		004	000			

REFERENCE CTRY CODE	REFERENCE ID NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT IND'CTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	DAY	HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	AMT		NODC STATION NUMBER
311524		NW	66341N	167355W		233	67	06	21	150	1969	BS3	071	0027	2	00	0	X		X4	X	9		0071

WATER COLOR CODE	WATER TRANS (m)	WIND DIR	WIND SPEED OR FORCE	BAROMETER (mb)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		19	S04	080	061	061	2	05	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁸	Σ Δ D DYN. M × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0530	3157	2495	0030153	0000	14677	754							
152		OBS	0000	0530	31568	2495			14677	754	064		003	000			
152		OBS	0005	0443	31828	2525			14645	796	084		004	003			
		STD	0010	0358	3186	2535	0026334	0028	14610	801							
152		OBS	0010	0358	31855	2535			14610	801	076		004	000			
152		OBS	0015	0338	31869	2538			14602	803	069		003	000			
		STD	0020	0303	3189	2543	0025589	0054	14589	805							
152		OBS	0020	0303	31893	2543			14589	805	078		010	002			

REFERENCE CTRY CODE	REFERENCE ID NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT IND'CTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	DAY	HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	AMT		NODC STATION NUMBER
311524		NW	66309N	167148W		233	67	06	21	161	1969	BS3	072	0027	2	00	0	X		X4	X	9		0072

WATER COLOR CODE	WATER TRANS (m)	WIND DIR	WIND SPEED OR FORCE	BAROMETER (mb)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		18	S07	090	072	072	2	05	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁸	Σ Δ D DYN. M × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0649	3146	2472	0032305	0000	14724	744							
163		OBS	0000	0649	31460	2472			14724	744	064		007	000			
163		OBS	0005	0603	31470	2479			14706	757	076		005	003			
		STD	0010	0483	3149	2494	0030260	0031	14658	766							
163		OBS	0010	0483	31490	2494			14658	766	068		005	000			
163		OBS	0015	0438	31529	2502			14640	753	080		006	000			
		STD	0020	0424	3153	2503	0029359	0061	14635	751							
163		OBS	0020	0424	31534	2503			14635	751	082		006	001			

REFERENCE CTRY CODE	REFERENCE ID NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° '1/10	DRIFT IND'CTR	MARSDEN SQUARE 10°	MARSDEN SQUARE 1°	STATION TIME (GMT) MO	DAY	HR 1/10	YEAR	ORIGINATOR'S CRUISE NO.	ORIGINATOR'S STATION NUMBER	DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS DIR	HGT	PER	SEA	WEATHER CODE	CLOUD CODES TYPE	AMT		NODC STATION NUMBER
311524		NW	66259N	16642 W		233	66	06	21	179	1969	BS3	073	0022	2	00	0	X		X1	8	6		0073

WATER COLOR CODE	WATER TRANS (m)	WIND DIR	WIND SPEED OR FORCE	BAROMETER (mb)	AIR TEMP. °C DRY BULB	AIR TEMP. °C WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
		21	S07	100	077	074	7	05	

MESSENGER TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY×10⁸	Σ Δ D DYN. M × 10³	SOUND VELOCITY	O₂ ml/l	PO₄-P µg-at/l	TOTAL-P µg-at/l	NO₂-N µg-at/l	NO₃-N µg-at/l	SiO₄-Si µg-at/l	pH	SCC
		STD	0000	0689	3136	2460	0033509	0000	14738	738							
181		OBS	0000	0689	31364	2460			14738	738	071		005	000			
181		OBS	0005	0641	31380	2467			14720	757	070		005	000			
		STD	0010	0459	3149	2496	0030037	0032	14648	764							
181		OBS	0010	0459	31488	2496			14648	764	072		005	000			
181		OBS	0015	0441	31498	2499			14641	764	080		005	000			
		STD	0020	0438													
181		OBS	0020	0438									028	000			

APPENDIX A

OCEANOGRAPHIC DATA

A complete description of the codes utilized in the tabulation of oceanographic station data can be found in National Oceanographic Data Center publication M–2, *Processing Physical and Chemical Data from Oceanographic Stations*. (Rev. August 1964, supplement issued May 1966.)

To facilitate use of the oceanographic station data listing, entry headings which are not self-explanatory are described below.

Depth to Bottom	Corrected or uncorrected sounding in meters.
Max. Depth of Samples	Depth of deepest sample to nearest multiple of one hundred meters.
Wave observations:	
DIR	Rounded to nearest multiple of ten degrees.
HGT	In increments of ½ m. Sum of 5 meters plus increments of ½ m if 50 is added to direction.
PER	If numerals 2 through 9 are entered, period in seconds is twice the numeric entry or 2× (numeric entry) + 1. For other entries see WMO Code 3155.
SEA	Sea state according to WMO Code 3700.
Weather Code	If preceded by X, weather according to WMO Code 4501. If a two-digit entry, weather according to WMO Code 4677.
Cloud Code	
Type	Cloud type according to WMO Code 0500.
Amount	Cloud amount in eights. Entry of the numeral 9 indicates cloud amount could not be estimated.
Water	
Color Code	Color according to Forel-Ule scale.
Trans	Transparency in whole meters as determined by Secchi disc.
Wind	
Dir	Rounded to nearest multiple of ten degrees.
Speed or Force	If preceded by letter S, wind speed in knots, if preceded by letter F, wind force according to Beaufort scale.
Barometer	Barometric pressure given in tens, units and tenths of millibars.
Air Temp. °C	Air temperature to tenths of a degree centigrade.
Vis. Code	Visibility according to WMO Code 4300.
No obs. depths	Number of observed levels associated with the station.
Messenger time	Entered in hours and tenths of an hour GMT. For Nansen casts, indicates time of release of messenger applicable to the observational level. For STD casts, indicates the starting time of lowering the sensor.
Card type	OBS designates observed levels. STD indicates the values at this standard level were interpolated by a modified 3-point LaGrange formula.
Depth (m)	Depth to nearest meter. A postscript T indicates depth was obtained thermometrically; S indicates uncorrected "wire out" depth. Postscript Q indicates value was marked doubtful by originator; P indicates value was considered doubtful by NODC. Postscripts P and Q retain this meaning throughout the following entries.
T °C	Temperature to hundredths of a degree Centigrade.
S ‰	Salinity in parts-per-thousand.
SIGMA-T	Entered to hundredths.
Specific-volume Anomaly — $\times 10^7$	Multiply entry by 10^{-7} to obtain specific-volume anomaly in cubic centimeters per gram.
$\Sigma\Delta D$ Dyn. M $\times 10^3$	Multiply entry by 10^{-3} to obtain anomaly of dynamic height in dynamic meters referenced to the sea surface.
Sound Velocity	Sound velocity according to Wilson's formula entered to tenths of a meter per second.
O_2 ml/l	Dissolved oxygen in milliliters per liter entered to hundredths.
PO_4-P μg-at/l	Inorganic phosphate in microgram-atoms per liter entered to hundredths.
Total-P μg-at/l	Total phosphorus in microgram-atoms per liter entered to hundredths.
NO_2-N μg-at/l	Nitrite-nitrogen in microgram-atoms per liter entered to hundredths.
NO_3-N μg-at/l	Nitrate-nitrogen in microgram-atoms per liter entered to tenths.
SiO_4-Si μg-at/l	Silicate-silicon in microgram-atoms per liter entered to whole units.
pH	Entered to hundredths.

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